

# **Presentation and Performance Abstracts**

**(In alphabetical order by author)**

**1. Abdulla M Alqaddoumi, Department of Computer Science, NMSU**  
*Functional Logic Programming*

Functional logic programming is a multi-paradigm programming that combines the best features of functional programming and logic programming. Functional programming provides mechanisms for demand-driven evaluation, higher order functions and polymorphic typing. Logic programming deals with non-determinism, partial information and constraints. Both programming paradigms fall under the umbrella of declarative programming. For the most part, the current implementations of functional logic languages belong to one of two categories: (1) Implementations that include the logic programming features in a functional language. (2) Implementations that extend logic languages with functional programming features. In this paper we describe the undergoing research efforts to build a parallel virtual machine that performs functional logic computations. The virtual machine will tackle several issues that other implementations do not tackle: (1) Sharing of sub-terms among different terms especially when such sub-terms are evaluated to more than one value (non-determinism). (2) Exploitation of all forms of parallelism present in computations. The evaluation strategy used to evaluate functional logic terms is needed narrowing, which is a complete and sound strategy.

**2. Amjad Abu-Baker, Klipsch School of Electrical & Computer Engineering, NMSU**  
*Minimizing Energy Consumption in Wireless Sensor Network by using Solar Power*

Energy consumption is considered as one of the important issues in the design of wireless sensor networks (WSNs). WSN consists of connected sensor nodes which are battery-powered devices. Since the energy supplied by battery is limited, different approaches have been studied to address this problem. This research focuses on this issue and proposes a linear programming model for energy efficient routing to minimize the energy consumption in WSNs by using solar power. This model is applied to different WSN topologies where random sensor nodes are generated in a specific area. A framework is developed to formulate this linear programming model with varying numbers of battery-powered sensor nodes and solar-powered sensor nodes. WSN is constructed and solar-power nodes with different degree of solar power are deployed. Finally, the formulated linear model is solved and the results are collected, visualized, and represented for performance comparisons.

**3. Ahmed Mohamed, Department of Animal and Range Sciences, NMSU**

*Using high resolution satellite imagery to evaluate the relationship between honey mesquite canopy cover and forage production on Chihuahuan Desert*

Honey mesquite (*Prosopis glandulosa* Torr.) invasion can negatively impact rangeland grazing capacity, spatial livestock distribution, and forage production in Chihuahuan Desert rangelands. High resolution remote sensing data can be used to develop shrub encroachment maps for arid rangelands. The objectives of this study were: 1) to use QuickBird satellite imagery to map honey mesquite invasion and estimate invaded areas in four pastures in the Chihuahuan Desert Rangeland Research Center (CDRRC) in south-central New Mexico, USA, and 2) to evaluate the relationship between honey mesquite canopy cover and perennial grass forage production in the CDRRC. QuickBird Ortho-ready satellite image with spatial resolution of 2.4 m at multispectral bands and 0.6 m at panchromatic band was acquired for the study area in May 19, 2009. Maximum likelihood supervised classification algorithm was performed to distinguish honey mesquite from other land cover categories. Plots of 12 x 60 m were subset from the classified map and used to calculate honey mesquite canopy cover percent on the 40 transects across the study area. The total honey mesquite invaded areas estimated from the image analyses were 143, 50, 92, and 136 ha in pastures 1, 4, 14, and 15, respectively. Regression analyses showed that increasing in honey mesquite canopy cover results in decreasing in perennial grass forage production ( $r = + 0.73$ ,  $n = 40$ ). Our findings indicate that classification of high-resolution satellite images imagery is a very useful tool for mapping invasive shrubs and determining their influences on forage production in desert landscapes.

**4. Alejandro Alvarado, Department of IE, NMSU**

*Neural Networks for Quality Defect Prediction in Injection Molding*

Injection molding has been characterized as one of the most versatile processes with rapid production rates. In the injection molding process, the polymer (plastic) is continually melted in a heated, traveling screw extruder. Some of the main issues involved in injection molding process are reduction of cycle time, lower production cost, and quality improvement of molded parts. Causes of variations in injection molding are related to the complexity of the process. This complexity is generally due to the vast number of factors acting during a regular production run, which directly impacts the quality of final products. Some of these factors are variations related to plastic behavior which is affected by changes in process parameter settings such as injection speed, pressure, temperature, time, and screw position. Various approaches show improvements on overcoming the complexity of the process, the manipulation of processing parameters, and the non-linearity of the process parameters. However, these approaches have been focused on analyzing the effects of changes of process parameters on the quality of products. Very little is known about the analysis of the effects of plastic behavior in quality of molded parts specifically in predicting quality defects due to plastic behavior during processing. This paper presents a neural network approach as a prediction method to map input data (related to melt temperature) with output data (related to quality defects). The resulted model shows the capability of neural networks to predict defects.

**5. A. Gariimella, Klipsch School of Electrical and Computer Engineering, NMSU**

*Novel Frequency Compensation Techniques for Low Drop-out Voltage Regulators*

Frequency Compensation Techniques are important for Low Drop-out Voltage Regulators in the stability point of view. This presentation focuses on the several techniques that we have developed as part of our research.

**6. Ana Luz Vivas, Department of Mathematics, NMSU**  
*Title- Dynamics of a Single-Strain Influenza (SAIQR)*

Mathematical models have become important tools in analyzing the spread and control in infectious disease. Influenza A virus is one of the most common diseases in humans. Starting from the basic epidemiological model SIR (Susceptible-Infectious-Recovered), two additional classes are included: A class (asymptomatic class, individuals less or equal infectious than the individuals from the I class) and Q class (quarantine class, individuals that are isolated after knowing that posses the infection). The model is denoted by SAIQR, and the results for the basic reproduction number  $R_0$  and the stability for endemic equilibrium  $E^*$  are obtained by using dynamical systems theory. Understanding the characteristic of influenza can lead to better approaches to follow the evolution of the disease, to contribute its diagnostic, and to prevent its transmission through vaccination programs.

**7. Anna Patterson, Department of Geography, NMSU**  
*Examination of vegetation intercept-transect sampling in an arid environment*

Rapid assessments of vegetative boundaries traditionally rely on interpretation of remotely sensed imagery. Field verification is necessary to determine if such plant boundaries are properly established. Variations of intercept-transect sampling are the most common sampling methods used in field verification. This article is a critical review of intercept-transect sampling literature, methods, and best practices pertaining to the establishment of vegetative boundaries in an arid environment. To assist the evaluation of intercept-transect sampling methods discussed in the literature, I performed a preliminary micro assessment. Based on this assessment, as well as a critical review of literature, I have concluded that line-intercept transects should be used in open terrain such as desert shrublands and grasslands, while twenty centimeter belt transects should be used to establish boundaries between two sparse (<5% cover) vegetation types. Recommendations for sampling rules, implementations, and terminology standardization are also included.

**8. Bryan Buschner, Department of History, NMSU**  
*The Portrayal of Japan in American movies, 1980-2000*

In the 1980s and 1990s the cultural relationship between the United States and Japan transformed into something new. Cultural perceptions transitioned from thirty five years of slow evolution to a brief period of divergent development due to Japan's bubble economy. The nature of this change was not terribly unlike the sudden shifts in past economic and political policy that led to conflict. In the late 1980s and early 1990s tension ran high. This transition is visible in the evolution of American movies such as Blade Runner, The Karate Kid, Black Rain, Mr. Baseball, and many others. In the same way I also investigate the change in portrayal of Japan after the bubble economy in the middle and late 1990s as well as the early part of the new millennium. To investigate this period I look at the portrayal of Japan in movies like Street Fighter, Hunted, Kill Bill and Last Samurai. These films, along with the critical, scholarly, and public reaction they created, show a change in American perceptions of Japan.

**9. Carl Swopes, Department of Industrial Engineering, NMSU**  
*A Fundamental Mathematical Argument for a CMY-RGB Color Model*  
**A FUNDAMENTAL  
MATHEMATICAL ARGUMENT FOR A CMY – RGB COLOR MODEL**

Mathematical argument for “A Fundamental Definition Of Color” CMY – RGB (subtractive – additive) Color Model of primary colors per the acknowledged method of combining two proportional and pure primary colors to get the third proportional and pure primary color within its

group. This mathematical color model also allows the addition or subtraction of values between corresponding CMY and RGB colors to shift (increase or diminish) one or the other color directly and the other colors indirectly. Per this color model, CMY – RGB color requires the application of the GRCC as “values” at their corresponding “frequencies” per the “long second”, which are defined with this presentation. Coloring outside the lines, coloring outside the box, color vector analysis, three-dimensional color systems, and mixing color pigments are beyond the scope of this presentation.

**10. Dan Zamborsky, Department of Biology, NMSU**

*Na<sup>+</sup>-driven multidrug efflux pump locus may effect colonization and symbiotic competence in the sepiolid squid-Vibrio fischeri mutualism*

Bobtail squid from the genus *Euprymna* form an environmentally-transmitted mutualism with gram-negative bacteria from the genus *Vibrio*. Symbiotic vibrios are acquired after hatching and therefore can exist in either seawater or mutualistically within squid. Identification of differentially expressed genes in symbiotically competent *Vibrio fischeri* has led to studies examining the roles of specific genes during either their free-living or symbiotic states. One such gene is the recently discovered Na<sup>+</sup>-driven multidrug efflux pump in Australian and Hawaiian *V. fischeri*, and is believed to play a part in persistence of symbiosis-competent vibrios in the free-living (seawater) state. Therefore, the goal of this study was to test the relative importance of this efflux pump and whether it plays an active role in metabolic processes or competitive traits that result in differential success in infection of the squid light organ. A mutated strain of *V. fischeri* with a derived Na<sup>+</sup>-driven multidrug efflux pump locus demonstrated significantly reduced growth rates at sodium concentrations when compared to environmental conditions. The mutant strain also had significantly slower growth in saltwater media as compared to the wild type under normal abiotic conditions (temperature and salinity). These preliminary results indicate a possible role for the Na<sup>+</sup>-driven multidrug efflux pump for survival during the free-living stage of *V. fischeri*, and may have similar effects when establishing a stable symbiosis with its host squid.

**11. Diane Delida Walker, Department of Curriculum and Instruction, NMSU**

*A Pedagogy of Happiness in Teaching and Learning*

Students and teachers are increasingly stressed from the unrelenting demand to perform well on standardized tests. Despite the government-mandated attention to standards, standardization and assessment, evidence from national tests indicates test performance and levels of literacy and numeracy continue to fall. Data indicate students lack an explicit understanding of what they are expected to know and be able to do. Many do not enjoy their time in learning institutions and realistically fear failure in our classrooms. Some students (and teachers) cannot make connections between conceptual knowledge and its practical application to everyday life. This lack of confidence and preparation often translates into an inability to do the work required for university success, and/or an altogether disinterest in pursuing higher education. I will present data from my current doctoral research on happiness in teaching and learning. I asked nine people to talk about what made them happy in teaching and learning. My research indicates how we can contribute to student and teacher happiness (also known as subjective well-being) by incorporating strategies that potentially reduce stress and increase conceptual understanding and retention of knowledge. We can make education more responsive to the need for relevance and connection by tapping into what the physicist Feynman calls, “The pleasure of finding things out,” Csikszentmihalyi calls, “Flow,” or the psychology of optimal experience (when we are doing something so interesting that time seems to stop), and what educational philosopher Noddings calls, “Happiness in education.”

**12. Floyd Michael Elliott, Department of English, NMSU**

*Clouds Being Torn By Mountains (Art Performance)*

As a poet in the MFA program here at NMSU, lately I have been focusing my work on the fracturing of the psyche. How do things such as Alzheimer's and dementia affect the self, and those around them? How about Schizophrenia and other forms of mental illness? My poetry explores, through differing lenses, the costs, pains and damages that are inflicted, as well as the coping mechanisms that some employ to survive. I will read from my current portfolio, "Clouds Being Torn By Mountains," as well as my soon to be published lyric essay, "We were asked to leave - The collected works of no interest to anyone."

**13. Ivan Rodriguez Borbon, Department of Industrial Engineering, NMSU**

*A Bayesian Reliability Model with Applications in Aerospace Materials*

This research presents the application of Bayesian analysis to construct a model for reliability analysis to determine lifetimes of aerospace innovated materials. The methodology consists of employing the Weibull proportional hazards model to estimate the lifetimes of the desired materials. In addition, Markov chain Monte Carlo (MCMC) techniques are used to estimate the parameters involved in the model under analysis and predict the reliability of the product under study. Since the resulting posteriors distributions of the parameters involved in the model are not standard probability distributions, Laplace method is used to find a proposal density for metropolis random walk chain. Finally, estimation of Reliability probabilities in aerospace data are obtained by computing this function on the simulated draws of the parameters. The results show that the methodology employed is a good estimator of lifetimes applied to aerospace innovated materials because Bayesian analysis provides more accurate results than regular inference methods. The reason for this is that Bayesian approaches integrate prior information into the analysis result in reliable inference compared with frequentist methods.

**14. J. A. Cuaron<sup>1</sup>, S. Dulal<sup>1</sup>, J. Rivera<sup>1</sup>, V. Nagarajan<sup>2</sup>, Y. Song<sup>3</sup>, A. K. Singh<sup>3</sup>, R. K. Jayaswal<sup>3</sup>, B. J. Wilkinson<sup>3</sup>, And J. E. Gustafson<sup>1</sup>, Department Of Biology, NMSU**

*The Staphylococcus aureus Tea Tree Oil Stimulon*

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**Background:** The biocide tea tree oil (TTO) is a steam distillate of *Melaleuca alternifolia* that denatures bacterial membranes and proteins and interferes with cell wall metabolism. We now report the first bacterial TTO stimulon expressed by *Staphylococcus aureus*. **Methods:** *S. aureus* microarrays and array data analysis protocols (NIAID-PFGRC) were utilized to determine the TTO shock transcriptome (0.25% v/v TTO at OD<sub>625nm</sub> = 0.4 and 1.0, for 15 and 30 min) of *S. aureus* strain SH1000, which were then compared to 93 other transcriptomes utilizing the *S. aureus* microarray metadatabase (SAMMD). TTO MICs, MBCs, and kill curves were also utilized in these studies. **Results:** SAMMD revealed that all TTO treatment stimulons were most similar to the *S. aureus* ethanol (ETH) shock stimulon (41 to 48% overlap). All TTO treatments also altered expression of the two-component system operons *vraSR* and *saeRS* and numerous genes controlled by *VraSR* and *SaeRS*. A *vraSR*-inactivated mutant also demonstrated a lower TTO MIC compared to the parent strain (0.15% ± 0 and 0.23% ± .01, respectively, p = 0.0005). A *dnaK*-

inactivated mutant also demonstrated a reduced TTO MIC ( $0.25\% \pm 0$ ) compared to the parent strain ( $0.28\% \pm 0.1$ ,  $p = 0.02$ ). **Conclusions:** The TTO stimulon is similar to the ethanol stimulon, and genes required for cell wall maintenance and the general stress response are required by *S. aureus* to react to the denaturing effects and altered cell wall metabolism induced by TTO.

**15. Jessica Havstad, Department of English, NMSU**

*Autographics: Uncovering Identity in the Visual Memoir Fun Home*

The term "Autographic" is the academic hybrid for an autobiographical comic book. In Alison Bechdel's *Fun Home*, one of the best examples of this genre, the narrator searches for her identity through the death of her father. Bechdel employs both text and image to allow audience into the forlorn memories of her past. The text weaves in and out of two timelines, the past and the present, where Bechdel uncovers personal meaning from her past and connects it with her own current revelations about her identity. The Autographic genre has evolved from a history of identifiable and important graphic artists and novels. *Fun Home* is a text that draws inspiration from such notable texts as Art Spiegelman's *Maus*. Its autographical context, explored within a richly personal graphic narrative, is embedded with literary and symbolic references eluding to the importance of finding identity through understanding intimate relationships. My research objective is to explore and explain both fundamental and elusive aspects of the genre, using *Fun Home* as the template for analysis.

**16. Joe Peterson, Department of Physics, NMSU**

*Study on Potential Fuel Cell Catalyst CoNx*

One aspect preventing fuel cells from becoming a market viable product is prohibitively high cost in catalysts. To address this problem new materials that combine desirable catalytic properties with durability and low cost are being analyzed. This research focuses on exploring the atomic configuration of one candidate material, CoNx, to aid in identifying structures that help in the catalytic process.

**17. Kyle Traylor, Department of English, NMSU**

*Tuesday Lizzie's Laughter: Mortification of the Flesh in "Goblin Market"*

This essay examines the roles of religion and sexuality in Christina Rossetti's poem, "Goblin Market." Contemporary criticism of "Goblin Market" often focuses on the relationship between the poem's two protagonists as being in some way radical, proposing that their actions advance a new model of spiritual female sexuality, one that treats the Eucharist as a form of body erotic. The alternate reading put forth within this paper, one based on the character Lizzie's laughter during a scene of violent, quasi-sexual assault, proposes that there is nothing radical about this model. Instead, Rossetti is drawing from medieval religious practices of mortification of the flesh, practices which conflated the act of suffering in emulation of Christ with a form of sexual release.

**18. Kari Simonsen, Department of Psychology, NMSU**

*Sonification in a UAV*

Sonification is the use of non-speech sound to present data or information. It is used as an aid for the visually impaired and as a method for augmenting cognition. Previous research has used sonification to make auditory graphs and sonified spreadsheets. This research aims to use sonification in an Unmanned Air Vehicle (UAV) display. The experiment was conducted with a 2x3 factorial design with both factors being within subjects. In both the visual condition and the sonified condition there were 4 gauges to monitor. There were also 3 competing task conditions (visual, auditory, and no competing task) in order to test the strain of each type of display on attentional resources. Results showed a significant effect of both display type and competing task as well as a significant interaction. Both reaction times and accuracy were tested. Results

suggested that reaction times for the sonification display were less variable than for the visual display and were not as affected by the competing tasks. Future research should aim to test other sonification methods, test the number of sonified gauges it is best to use, and test the best type of information to display in sonified gauges.

**19. Kate Baldwin, Department of History, NMSU**

*The General Strike for Peace, 1962*

The 1962 General Strike for Peace was the first multi-city strike to be successfully carried out in the United States. Organized by Julian Beck and Judith Malina, founders of the avant-garde, off-Broadway Living Theatre troupe, the General Strike took place not only in the United States but in countries like Mexico, Germany and England, where noted social critic Bertrand Russell sponsored the London GSP committee. The General Strike for Peace might be one of the greatest unsung moments in American protest history.

**20. Karunakar Gampa & Sri Naga Aditya Charan Vemprala, ECE, NMSU**

*Errors in Fault Analysis of Power Distribution Systems Using Sequence Components Approach*

In this presentation, we have shown quantification of errors using sequence component method of fault analysis for IEEE 13-bus, 34-bus, and 123-bus distribution test systems. However, few studies are published that attempt to quantify such errors. All major types of faults are considered at each bus and results using the sequence component model are compared with results using the three-phase model. The spectrum of errors for each type of fault is presented through graphs.

**21. Kiran Sapkota, Department of Biology, NMSU**

*Prevalence and Antibigram of Methicillin Resistant S. aureus (MRSA) in Clinical Samples from Tertiary Care Hospital*

Methicillin-resistant *S. aureus* (MRSA) was first detected in the 1960s, and since that time it has spread rapidly worldwide, becoming a leading cause of nosocomial infection. Because MRSA are also resistant to many antibiotics, the infections caused by them are particularly difficult to treat. A total of 4690 clinical samples were microbiologically processed and antibiogram was performed from the positive *S. aureus* isolates in tertiary care hospital in Nepal. MRSA was isolated from variety of clinical specimens. Among a total samples, 31.1% (82/264) *S. aureus* were found to be methicillin resistant. The antibiotic resistance of MRSA was highest with Amoxicillin (100.0%) followed by Cloxacillin (90.2%), Cotrimoxazole (68.3%) and Erythromycin (61.0%). Good communication should be established among laboratory, hospital wards and physicians for effective infection control against MRSA in tertiary care hospitals.

**22. Lisa Jo Elliott, Department of Psychology, NMSU**

*Analogical Reasoning and Naturalistic Decision Making*

Decision making in the natural world has garnered much attention lately. In laboratory experiments, behavioral decision-making studies reveal that people rely on cognitive heuristics and biases, which result in sub-optimal decisions. In the natural world, professionals in decision-making positions rely on their expertise. It is hypothesized that experience modifies a decision maker's perception and judgment of the situation's features. The ability to separate the important features from the unimportant features of a situation is vital to building and exercising expertise. I contend that analogical reasoning, a type of inductive reasoning, underlies this ability in problem solving and decision-making. In this regard, problem solving and decision-making are similar. The current experiment examines the role of analogical reasoning in feature noticing using two operational

decision making domains. I believe that analogical reasoning and feature noticing performance are strongly correlated in both domains.

**23. Lekha N. Adhikari, Department of Physics, NMSU**  
Study of Glassy Selenium Tellurium Antimony Ternary System  
( $\text{Se}_{85-X}\text{Te}_{15}\text{Sb}_X$ ; X= 0, 2, 4, 6, 8 &10)

Study of Glassy Selenium Tellurium Antimony Ternary System ( $\text{Se}_{85-X}\text{Te}_{15}\text{Sb}_X$ ; X= 0, 2, 4, 6, 8 &10) using **Differential Scanning Calorimetry** is based on different atomic percentages of antimony and selenium with the element tellurium held fixed at the 15 atomic percentage level. The glassy sample for the present study is Se-Te-Sb which has been prepared by the melt quenching technique. Different amounts of antimony and selenium have been added to the fixed proportion of tellurium element to give the ternary sample  $\text{Se}_{85-X}\text{Te}_{15}\text{Sb}_X$ . The study of glass transition phenomena and the calculation of activation energies for different atomic weights has been carried out by the use of Differential Scanning Calorimetry (DSC). The main purpose of this instrument is to generate and analyze the data from the given samples. The glass transition temperature ( $T_g$ ); the onset crystallization temperature ( $T_c$ ) & the peak crystallization temperature ( $T_p$ ) have been determined from the data obtained from DSC for different heating rates for the samples. Then, the activation energy for the glass transition and crystallization phenomena have been calculated with the help of  $T_g$ ,  $T_c$  and  $T_p$ . These energies have been calculated on the basis of Kissinger's and Matusita's models and different values of  $T_g$ ,  $T_c$  and  $T_p$  obtained from different heating rates, have been compared for the corresponding samples. An attempt has also been made to determine the dimension of the growth process of the prepared samples.

**24. Laura D. Reyes, Department of Anthropology, NMSU**  
*First evidence for female transfer in Australopithecus afarensis*

Previous literature equates high body mass and canine sexual dimorphism with elevated male-male competition, indicating polygyny. *Australopithecus afarensis* demonstrates a high degree of body mass sexual dimorphism, suggesting polygyny, yet a low/moderate degree of canine sexual dimorphism, suggesting monogamy. Some argue *A. afarensis* was polygynous and lived in harem-like social groups, while others assert its monogamy. Early hominid sex ratios and sexual dispersal patterns have not yet been examined. We examined the sex ratio and non-metric traits of 14 mandibular molars representing eight individuals from the "First Family" site at Hadar (A.L. 333/333w). We used the distribution of molar areas to determine sex, with larger molars deemed male, and smaller molars deemed female. The non-metric traits employed are protostylid, postmetaconulid, hypoconulid, tuberculum sextum, and groove pattern. To determine which sex is more similar, we calculated the range of scores for each trait and compared the amount of intra-sexual variation between sexes. We identified four males and four females within the sample. Analyses show males demonstrate more similarity in the hypoconulid, protostylid, postmetaconulid, and groove pattern. In contrast, females demonstrate more similarity only in the tuberculum sextum. Results suggest *A. afarensis* had a social organization with an even sex ratio and more similarity among males than females. Despite arguments for both monogamy and polygyny based on body mass and canine size dimorphism, an analysis of A.L. 333/333w molars does not support either type of social organization. *A. afarensis* likely practiced male philopatry in a multi-male, multi-female group, much like Pan.

**25. Laura D. Reyes, Department of Anthropology, NMSU**  
*A pilot study on inter-individual proximity in black howler monkey (*Alouatta pigra*) groups in northern Belize*

This study uses pilot data to examine proximity among members of three *Alouatta pigra* groups at two study sites in Belize to determine group cohesion. Group cohesion conveys information about a group's vigilance for predators and other groups, along with intra-group relationships. Group

cohesion was measured by assessing proximity among individuals in a group: more proximity indicated higher cohesion and stronger relationships, while less proximity suggested lower cohesion and weaker relationships. Proximity was compared among males and females, and adults and juveniles during four activities: feeding, resting, howling, and traveling. Inter-individual contact was considered separately since it occurred at one site and close proximity was inherent. Results showed that inter-individual proximity was closest during travel than any other activity. Additionally, females were in closer proximity to other members than were males, while juveniles kept the least proximity. The smaller group showed less cohesion than larger groups, although the only instance of contact occurred within this group. These findings indicate group cohesion is group-size dependent, as smaller groups are likely less cohesive due to increased vigilance. Intra-group relationships are age and sex dependent: close proximity among females and other members indicates that they are not involved in vigilance activities and may seek closer proximity for protection, while juveniles may exhibit less proximity to dissociate from their current group in preparation for group transfer. This pilot study presented avenues for future research, particularly further examination of how group size and vigilance influence group cohesion and social relationships.

**26. Muhammad Wasequr Rashid, Department of Electrical and Computer Engineering, NMSU**

*Adaptive Biasing Technique for Class AB Amplifier Output Stage*

A simple but effective scheme for a novel class AB amplifier technique is introduced. This work uses a Wilder current mirror circuit at the output stage of a multi-stage amplifier in order to reduce quiescent current. The new class AB amplifiers are designed in a 0.5 $\mu$ m process with power supplies of  $\pm 1.5$ V and simulated with HSPICE. The use of Wilder current mirror circuit results in a low-voltage, low-bias current amplifier. Simulation results illustrate the improved operation of the proposed class AB amplifier.

**27. Mohammed Habeeb Ur Rahman, Klipsch School of Electrical Engineering, NMSU**

*Simulation Technique to Observe Brillouin Precursor in Loamy Soil*

It has been long known that propagation of electromagnetic pulse through dispersive media give rise to Brillouin and Sommerfeld type precursors. The mathematical model to represent these precursors, in most dispersive media, results in mathematically intractable complex differential and integral equations. However, modern asymptotic theory of pulse propagation through dispersive media gave rise to closed-form formulations for Brillouin type precursors. There are, however, very few experimental studies reported in the literature to experimentally observe the existence of the precursors and characterize the evolution of these precursors in a given dispersive media. A simple mathematical formulation has been introduced to observe electromagnetic pulse propagation in Rocard-Powles-Debye model of dispersive dielectric for distilled water using a waveguide. Moreover, these formulations are validated using existing reported results

**28. Malini Murugesan, Department of Electrical and Computer Engineering, NMSU**

*Hardware implantation of microcontroller based governor*

The objective of this project is to implement a microcontroller based governor for the synchronous generator. The microcontroller used in this project is the Freescale MCF51QE128 which is a 32 bit coldfire Architecture. The governor is designed to control the speed/frequency of the synchronous generator. The speed/frequency of the synchronous generator is required to be a constant. The increase or decrease in the load could change the speed of a synchronous generator. The governor senses the change in speed/frequency of the generator and increases or decreases the steam (or any source) so that power going into the generator equals the output power. The design consists of ADC, PWM and digital PID on a microcontroller. The ADC module will compare the change in the speed/frequency of a synchronous generator and compares it with the reference

speed. This error that is produced as a result of the comparison is given as an input to the PID controller. The PID is the basic feedback mechanism which will provide the corrective action to minimize the error signal. The resulting signals from the PID controller will be used to generate the PWM (pulse width modulation) signals. The PWM duty cycle will control the switching action of DC-DC converter which drives the DC motor. The PID is the basic feedback mechanism which will provide the corrective action to minimize the error signal. The resulting signals from the PID controller will be used to generate the PWM (pulse width modulation) signals. The PWM duty cycle will control the switching action of DC-DC converter which drives the DC motor.

**29. Maria Schrock, Department of History, NMSU**

*Mexican Women: A Traditional Society*

Women in Latin America have struggled for freedom and equality since the arrival of the Spanish and Portuguese peoples to the American continent. Both, Spanish and Portuguese viewed women somewhat different from the view that some of the natives of the Americas had. One could use Mexican women as a great example. Prior to the arrival of the Spaniards, women in Mexico had more freedom in their lives; unfortunately for them, things were to change. Soon the Spaniards began conquering their land and changing their lives. This paper will examine the evolution of the rights of Mexican women, focusing primarily on the years right after independence (1821) to the 1980s. Also, it will describe how women in Mexico fought and struggled over this long period of time to obtain rights such as the right to an education and the right to vote. The paper will also seek the answer to the question of how the actions of the Mexican government affected women's lives in the area as of marriage, education, and political participation. The paper argues that while the Mexican government passed several laws designed to protect women during the long period of 1880s through the 1980s, women's lives remained restricted and social views about women remained traditional in the areas of marriage, education and politics.

**30. Megan M. Wong, Department of English, NMSU**

*Apologia for Living Messy (Art Performance)*

How does a young widowed mother negotiate her perspective in the world of the domestic? What place do men have in a female-driven society? These sometimes called "snarky" poems question the most basic attitudes women assume in their relationships with children, men, and the ethical questions that pop up when the two don't fit together very well.

**31. Nicole Harings, Boeing Wiebke, Biology and Fish,  
Wildlife, and Conservation Ecology, NMSU**

*The Influence of Environmental Variables on Southwestern Toad Occupancy*

Amphibian populations are biodiversity gauges and still declining across the globe. Causes include climate change, habitat modification, and combinations of factors. Climate change is defined by increases in temperature, ultraviolet radiation (UVR), and decreases in pH. Preliminary observations suggest five desert toad species (*Spea multiplicata*, *S. bombifrons*, *Scaphiopus couchii*, *Bufo cognatus*, and *B. debilis*) partition cattle tanks according to time, space, and habitat quality. I surveyed cattle tanks in Jornada Long-term Experimental Range, in Dona Ana County, New Mexico for toads to determine their relative abundances and distributions using occupancy modeling methods supplemented by call surveys. I also measured water quality parameters (temperature, UVR, pH, salinity, O<sub>2</sub>, NO<sub>3</sub>, and NH<sub>3</sub>) to determine habitat influences relative to occupancy. Call surveys were conducted using a standardized index based on call intensities (0 = absent, 1 = few individuals, 2 = overlapping, individual calls distinguishable, 3 = full chorus, individual calls indistinguishable) during five minute intervals. To estimate occupancy rates, a count statistic was acquired using sight to observe for species presence and breeding aggregates. Occupancy states were ordered as follows: 0 = species absent, 1 = species present and not breeding, and 2 = species present and breeding. Environmental parameters explain some but not

all of the toads' abundance and distribution. Furthermore, questions will be addressed concerning ecological processes and population-level dynamics. This study will add to the understanding of life histories, determine the current status, and indicate influential habitat parameters on relative abundance and distribution of southwestern toads.

**32. Naomi Moreno, Department of English, NMSU**

*I Want to Suck Your Blood (and borrow a cup of sugar too): Sympathetic, Social Bloodsuckers in 20th Century Literature*

This essay, which is part of a larger project, analyzes the evolution of the vampire. The early vampire was isolated, morally depraved, and feared. Around the middle of the 20th century vampires become sympathetic due to their portrayal as moral, social, attractive beings that are consequently desired by humans. This essay attempts to answer why and how the vampire has changed drastically over time. The change in the representation of the vampire has often been attributed to Anne Rice who deviated from her predecessors' portrayal of the traditional vampire. However, two overlooked deviations of the classic vampire tale occur before Anne Rice's transformation; both Richard Matheson's *I am Legend* and Theodore Sturgeon's *Some of your Blood* have characters that are not your typical bloodsuckers. By examining these two books along with Rice's *Interview with the Vampire*, I argue that vampires must change, as our society does. The bloodsuckers in these works demonstrate shifting social values in regards to sexuality, morality, and family structure. My research primarily focuses on cultural and social movements in the 1950s, 1960s, and 1970s. Through applying my research to my analysis of the three novels I discovered that each author's transformation of their monster could be interpreted as a response to cultural anxiety over social ideals of the normative.

**33. Nina Javaher, Educational Management and Development, NMSU**

*Outcome differences in participating and non participating Hispanic students in supplemental Instruction classes supporting Organic chemistry I and II at New Mexico State University*

Lack of academic success of Hispanic students in higher education has caused university administrators from cross the nation to seek alternative programs to improve academic success and retention of Hispanic students. Hispanic students are less likely than white students to complete advanced science classes including Chemistry (National Center for Education Statistics, 2003). With the shortage of an educated workforce, the nation is dependent on educating the fastest growing ethnic/racial population. Of the 17,200 student enrollment in Fall 2008, 40% were Hispanics which makes NMSU a Hispanic serving institution (New Mexico State University Fact book, 2008). There are many programs at NMSU which supports Hispanic students. One of these programs called supplemental Instruction (SI). The purpose of this study is to investigate whether SI reduced the number of D's, F's and W's among Hispanic students in Organic Chemistry courses at NMSU between the years of 2001–2004. This study is significant because it examines a method to retain Hispanics students in school at New Mexico State University (NMSU) which is a Hispanic serving institution.

**34. Paul Kuhns, Department of History, NMSU**

*Through the Looking Glass: Identity Formation in Political Cartoons of the 1906 Iranian Constitutional Revolution*

In the late nineteenth century, Iran stood at the crossroads of British and Russian imperialism. As pawns in the "Great Game," the Qajar monarchy oftentimes found itself powerless even within its own borders. A string of economic concessions granted to foreign powers, allowing them to claim virtual sovereignty over the Persian economy, led to growing dissension amongst sectors of the Iranian citizenry. The people ultimately erupted in the Iranian Constitutional Revolution of 1906-11, which resulted in the formation of a legislative body (majlis). During the early revolutionary period

(1906-1908), the Iranian press blossomed as writers and artists debated countless socio-political issues. Political cartoons were one of the most influential mediums through which notions of nationalism, constitutionalism and collective identity spread to the Iranian citizenry. This presentation, which forms the basis for my M.A. thesis, is based on primary sources gathered from the Iranian World Collection at the Library of Congress, namely political cartoons from the newspapers Mulla Nasrredin and Kashkul. These political cartoons used competing tropes when representing foreigners in order to solidify a sense of unity by being critical of foreign intervention while self-reflective at the same time. Thus, examining representations of foreign "Others" will provide insight not only into how Iranians during the revolutionary period viewed foreigners, but also how Iranians viewed themselves. Close examination of these images will lead to a better understanding of what issues were important to Iranian citizens. To illustrate this point, I will be discussing competing theories of identity formation and Orientalism/Occidentalism by investigating several political cartoons from these two newspapers.

**35. Qiumin Dong, Department of English, NMSU**

*Globalized Remix/Mix: Integrating non-Western Rhetoric in Graduate Programs*

This presentation addresses the need to develop/strengthen intercultural and comparative rhetoric instruction in graduate programs of Rhetoric and Composition. After identifying the lack of/inadequacy in non-Western rhetoric teaching in many programs, the presentation proposes a comprehensive metatheoretical perspective, representing a more profound instructional attempt to bring in the lens of cross-cultural rhetorical traditions and conventions to the current curriculum. Although many researchers have described, analyzed, and conceptualized rhetorical traditions and practices of non-Western cultures as well as urged on enhancing students' cultural awareness, most rhetoric programs have overlooked this research scholarship and failed to consider non-Western rhetoric in their curriculum. Therefore, I argue that non-Western rhetoric receives little attention within the rhetoric and composition program, and based on an examination of courses in the programs, I also propose a change in current curriculum by integrating non-Western rhetoric in graduate coursework through combining the perspectives of comparative rhetoric, intercultural communication, and intercultural rhetoric. Such an approach promises students an opportunity to develop a complex understanding of communication across cultures and resonates with our field's goal of globalization and internationalization. This presentation is structured as follows: after an introduction, it will examine the opportunity of the integration by briefly reviewing recent studies on program development and critiquing current curricula adopted by a range of universities. Next, the presentation will outline some of the prominent themes of comparative rhetoric, intercultural communication, and intercultural rhetoric and examine their implications as related to course design. Concluding remarks and instructional recommendations are addressed in the last section.

**36. Qin Yang, Department of Mathematics, NMSU**

*Regular completions*

Ordered algebraic structures plays an important role in a wide range of areas, including analysis, logic etc. It is our interest to complete an ordered algebraic structure in a way that preserves some aspects of the algebraic structure and certain families of joins and meets. My advisor Dr. John Harding has proved that there are only two varieties of lattices closed under MacNeille completions: the trival variety of lattices and the variety of all lattices. How about regular completions? This is an open problem. In this presentation, I will show that if we add one more assumption, then we can get a good result.

**37. Ramona Reeves, Department of English, NMSU**  
*Join Me! (Creating Community in the Online Classroom)*

With the loss of body language and cues that are common in the face-to-face classroom, how do we as teachers go about building community in the online classroom? As Rena Palloff and Keith Pratt point out in their book "Building Online Learning Communities," a "community" no longer refers only to a place-based group, and yet, what it means to be part of a community--feeling a sense of belonging and support--remains important in the virtual classroom. Transferring this sense of community to the online classroom can not only enliven discussions and increase participation, but it can also create a dynamic learning environment where students learn from each other as well as from the instructor. This session will focus on how to create a sense of community in the online classroom and will encourage audience participation and discussion.

**38. Rachel Guy Fish, Wildlife and Conservation Ecology Department, NMSU**  
*Inductive Habitat Modeling of the American Marten over the Western US*

Recently, modeling species habitat distribution at the landscape scale has been recognized for its importance in predicting dispersal patterns and identifying new pockets of habitat. Traditionally, modeling at large extents has been accomplished using habitat relationships with environmental factors such as vegetation communities, elevation and climatic variables. However, as is the case with the American marten (*Martes americana*), other gradient variables, such as the percent of the landscape that is forested, have not been created over large extents. It is also uncertain if the influence of these variables can be extrapolated to the entire range of a species. The objectives of this study were to: i. model marten distribution over four disparate regional extents and over the 11 state region of the western United States of America, ii. Interpret the contribution of the new datasets iii. Compare results to the literature concerning the influence of these environmental variables. The results from the four small regional models when compared to marten occurrences was in agreement with the literature at each site. The western wide model of the marten's range, created in Maxent, resulted in a strong predictive model with percent forest cover contributing to most of the model, also in agreement with the literature. These results highlight the importance of a dataset that spatially models gradients of cover change and offer a method by which such a dataset can be interpolated. This type of spatial dataset would have application in conservation planning for a variety of terrestrial species.

**39. Reina Nashiro, Department of English, NMSU**  
*New Potential for Post-colonial Writing: Jean Rhys' \_Wide Sargasso Sea\_.*

The most remarkable feature in Jean Rhys' post-colonial novel *Wide Sargasso Sea* is her willingness to give Rochester a voice. The novel allows two narrators, Antoinette and Rochester, to give independent points of view. Rhys' primary intention is to give a voice and life to Charlotte Bronte's mad Creole character Bertha (Antoinette), who is not allowed to speak prior to her death in *Jane Eyre*. However, in giving Rochester a voice, Rhys also allows her readers to sympathize with Antoinette's tormentor by showing his emotional turmoil and human weakness. In the novel, Rhys does not force the reader to empathize only with Antoinette. This attitude is what distinguishes her novel from the standard set by earlier post-colonial writings, which are often characterized as acts of resistance against colonialism and colonial works. Her point of view as a Caribbean-born white Creole differentiates her perspective from colonial writers' and even from earlier post-colonial writers' because she also embodies the heritage of the native. Through *Wide Sargasso Sea*, Rhys develops the potential of pluralistic interpretations of postcolonial writing and inspires subsequent post-colonial authors to not over simplify the roles of the conqueror and the conquered.

**40. Reyna Munoz, Department of English, NMSU**

*Bridging the Tensions Between Love and Hate for Mexican Men in Sandra Cisneros' Woman Hollering Creek and Other Stories*

I would like to present on Sandra Cisneros' *Woman Hollering Creek and Other Stories*. Specifically, I'm interested in the different tensions that exist between the relationships between a Mexican woman and the Mexican man. Within the stories, Cisneros seems to be commenting on how different elements (myth and legend) as well as popular culture influences (telenovelas and Mexican films) seem to influence how these women are shaped emotionally particularly in regards to their expectations and desires of/towards men. I'm interested in how this love/hate relationship is manifested throughout these stories which are broken up in three parts, tracing the Mexican woman from childhood through adolescence up to adulthood. The intracultural perspectives showcased within these stories exemplify how these relationships are problematic in a sense, and highlight how that internal struggle exists in each Mexican woman because of her cultural background and influence(s).

**41. Sophia Cisneros, Department of Physics, NMSU**

*Dark Matter: Missing Cross Terms in the Metric, as Opposed to Missing Matter*

We show a preliminary analysis of the flat rotational velocity curves observed for galactic discs, in which the observed Doppler shifts are partially representative of actual rotation speeds and partly a function of the rotation of the space itself; as per frame dragging effects. As noted by W. Rindler; "if there are cross terms in the metric, we get two very different speeds of light..." These effects are analogous to a varying index of refraction arising from the covariant wave equation. Current work has focused on interpreting wave length shifts via the Lorentz flat space metric or by linearizing the Kerr metric to arrive at estimates of frame dragging effects. We show that these linearized theories are necessarily inconsistent with the non-linear Einstein Equations. By making use of the manifest symmetries of galactic discs, we are able to exactly solve the full Kerr wave equation to show that the change in light speeds does in fact contribute far more heavily than predicted by linearized theory. Further, we show that there may be a direct correlation between luminous matter and the observed rotation curve. This perhaps does not obviate Dark Matter, but simply identifies it with the missing cross terms in the metric involving time.

**42. Sandra Campos, Department of Plant and Environmental Sciences, NMSU**

*Arsenate Sorption on Calcareous Soils of New Mexico*

The strong affinity of calcite for arsenic predicts its importance for arsenic sorption on calcareous soils. More sorption sites for arsenic are provided as the calcite content increases, but the sorption capacity is not solely related to the amount of sorption sites and arsenic concentration. Precipitation and dissolution of calcite can favorably or adversely affect arsenic sorption. A mechanistic approach was applied to batch sorption experiments on prepared calcareous sand to study arsenate sorption as a function of calcite content ranging from 1.5% to 8%. Calcareous sand with 8% calcite content has the capacity to significantly sorb arsenate from solutions containing 50 ppm arsenate. Unavailability of sorption sites at the 1.5% calcite content sample was apparent at arsenate solutions of 10 ppm, which indicates that this calcite content is insignificant for arsenate sorption. The dissolution of calcite has implications for immobilizing arsenate by trapping it in its crystal lattice as it re-precipitates. Calcite dissolution may have occurred with hydrochloric acid addition to samples resulting in a decrease in sorption by the sample containing 8% calcite. The buffering capacity of calcite could be a determining factor in the amount of arsenic immobilized. Observed trends from such sorption isotherms are of interest due to input of arsenic to calcareous soils from sources such as ground and surface waters through irrigation and land application of wastewater effluent. Analyses of the samples containing sorbed arsenate by X-Ray Diffraction may reveal the formation of calcium arsenate precipitates.

### 43. Santosh Dulal, Department of Biology, NMSU

#### *Isolation and Characterization of a Neutralizing Antibody Specific to Clostridium botulinum Neurotoxin Serotype F (BoNT/F)*

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**Background:** Seven immunologically distinct botulinum neurotoxin serotypes denoted as BoNTs/A-G are produced by the bacteria *Clostridium botulinum*. BoNTs are initially synthesized as 150kDa single-chain polypeptides consisting of a 100kDa heavy chain (HC), a 50kDa light chain (LC), and a linking disulfide bridge. Methods: mAb, designated as FHNm, was isolated by BoNT/F toxoid immunization and hybridoma techniques. Specificity, cross reactivity, and epitope localization of FHNm were characterized by performing indirect ELISAs, SDS-PAGE, Western blot, and immunoprecipitation. In vivo neutralization assays were performed via injection of purified FHNm challenged to BoNT/F. Synthetic genes encoding BoNT/F partial fragments were designed, cloned, purified, and analyzed for the recombinant catalytic (rFLC), translocation (rFHN), and receptor binding (rFHCC) domains. Results: Indirect ELISAs revealed that FHNm only recognizes BoNT/F and shows intermediate avidity towards the HN domain when compared to BoNT/F recombinant fragments and all BoNTs investigated. FHNm recognition of 100kDa BoNT/F HC, 75kDa rGST-FHN, and 50kDa rFHN domain (GST free) indicates the presence of an epitope region. Neutralization assays with the introduced FHNm delayed death in mice by 26 hours when intoxicated with 10LD<sub>50</sub> BoNT/F. Interestingly; all mice survived 5LD<sub>50</sub> BoNT/F when given FHNm. Conclusions: Immunoprecipitation assays clearly demonstrated that FHNm has a conformational epitope and internalization of BoNTs into a host may not result when complementation of FHNm/HN occurs. In addition, partial neutralizing activity towards BoNT/F by FHNm has been observed. Further research may contribute to a better understanding of the immunological aspects of BoNT/F and corresponding applications in pathogen detection and vaccine candidacy.

### 44. Shyam Kattel, Department of Physics, NMSU

#### *Catalytic Selectivity of Transition Metal Functionalized Graphene*

Shyam Kattel, Boris Kiefer; Physics Department, New Mexico State University, Plamen Atanassov; Department of Chemical and Nuclear Engineering, University of New Mexico

Energy production is expected to be one of the most significant challenges in the 21st century. Fuel cell technology can provide a solution to this challenge but relies currently on catalysts such as Platinum or Palladium. These precious metals are rare and expensive, therefore it is important to develop technologies that utilize more abundant and cheaper metals as catalysts while showing a similar performance. We have performed density-functional-theory calculation to investigate the interactions between small molecules, a transition metal (TM) and a carbon support that was modeled as a graphene. The results show that N<sub>2</sub>, CO and O<sub>2</sub> bind and retain their molecular identity. In contrast, H<sub>2</sub>O<sub>2</sub> decomposes and forms a stable TM-(OH)<sub>2</sub> complex. The binding energies of O<sub>2</sub> and H<sub>2</sub>O<sub>2</sub> translate into desorption temperature of 490 K and 800 K respectively. These two very different interaction scenarios and binding energies provide an explanation for the experimentally observed O<sub>2</sub> selectivity: O<sub>2</sub> can readily desorb under processing conditions while the removal of OH from the TM requires the assistance of one or more particles in the electrolyte, and is thus less probable. Therefore the O<sub>2</sub> pathway is expected to be dominant, consistent with experimental observations. This understanding provides the insight that is needed to optimize current designs for non-platinum based catalysts for energy generation for example in direct methanol fuel cells.

**45. Sieun An, Department of Psychology, NMSU**  
*Moral Attribution and Emotions*

An and Trafimow (2007) found differences in moral attributions for Americans and Koreans: Americans had more moral attributional weight after perfect duty violations (e.g. dishonesty, disloyalty) than imperfect duty violations (e.g. unfriendliness, uncharitability). Koreans did not differentiate between perfect and imperfect duties. Subsequently, responses to moral violations were tested to assess the role of affect: Koreans did not appear to use affect in making attributions about moral violations. However, another study involved manipulating affect of participants and suggested that Koreans do use affect in response to moral violations in making moral attribution, but do so differently. Therefore, differences in evoked affect may cause differences in moral attributions. To test this idea we chose the four basic negative affects: fear, anger, sadness, and disgust. The results replicated previous findings about the number of immoral behaviors needed to override previous impressions. Participants indicated how they felt about others' immoral behaviors, and which was the most negative of the four emotions. Importantly, there were differences between Koreans and Americans for types of negative affective response to immoral behaviors: Koreans reported sadness most strongly; Americans reported anger most strongly for unfriendly behavior. Only two Americans reported fear as the most negative affect. In contrast, more than half of the Koreans reported fear at least once as the most negative affect in response to immoral behaviors. These results suggest that people in different cultures have different affective responses, and this may reflect in their behaviors. Specifically, processes surrounding moral judgments differ across cultures.

**46. Suresh Gautam, Department of Electrical and Computer Engineering, NMSU**  
*Application of Mathematical Morphology Based Tool to Detect a Power Swing*

Mathematical Morphology (MM) is primarily used as a tool for analysis of geometrical shapes and structures. Recent literatures discuss this tool for its possible applications in power systems. However, the application of MM as a real-time filtering tool in power systems has not been explored and documented adequately. This paper reports further contributions to the previous efforts in this direction. The paper illustrates how an appropriate choice of the structuring element (SE) can change the way the signal is filtered and develop a method to detect low frequency phenomena in power system. Power swing being a typical low frequency phenomenon in a power system, the developed method is used to detect a power swing simulated in a double circuit transmission line. PSCAD/EMTDC® is used for simulation and Matlab® for the analysis of waveform obtained from the simulation. The result of the study are presented and analyzed. Based on the analysis, future work is outlined for construction of an improved out-of-step blocking tool using this method.

**47. Saran Kumar Rai, Kiran Sapkota,, Ashley Graboski, , Thriveni Reddy, Robert W. Buckingham**  
*Barriers of Prostate Cancer Screening (PCS) Among Hispanic Male Population*

There is a growing research interest in the association between Prostate Cancer Screening (PCS) and Hispanic males. Prostate Cancer is one of the common cancers found in Hispanics (American Cancer Society), and early PCS lowers mortality rate to some extent. However, Hispanic males receive later diagnosis of cancer, and have consistently lower survival rates. There is relatively little substantive information available in the published literature regarding men's PCS issues among Hispanics. This analysis will help to understand the predictors of PCS in Hispanic males as this group of people differs in incidence and mortality rates in United States. The statistical data of incidence and mortality rate of prostate cancer in Hispanic males from different sources were analyzed. Many Hispanic males lack knowledge about PCS. As a result, many Hispanic communities underestimate prostate cancer risk compared to white non-Hispanic communities.

Prostate cancer interventions focusing on risk perceptions need to be tailored to accommodate subgroup differences in acculturation levels, knowledge and attitude towards PCS.

**48. Sravan Kumar Buggaveeti, Electrical Engineering, NMSU**  
*A Morphological Filter to Distinguish a Fault from Capacitor Switching*

Modern digital relays have substantially reduced false operation of overcurrent relays used for capacitor protection and are fast in operation. Various structural designs of capacitor banks have come up to improve the protection. However, faster and more reliable operation can be useful. This paper proposes a morphological filter for fast and clear distinction between fault currents and switching currents that can benefit all types of overcurrent relays used for protection of capacitor banks. The morphological filter is modeled using the MATLAB®. The filter performance is tested using waveforms generated from PSCAD/EMTDC® simulation of a standardized test-system.

**49. Shiva Prasad Pokharel, Department of Electrical and Computer Engineering, NMSU**  
*An Optimal Placement of PMUs for Finding Fault Location*

Phasor Measurement Units (PMUs) have been increasingly used in a power system for various applications. Some of the online applications include state measurement, energy management systems, wide area monitoring and control, adaptive protection and so forth. They are equally used in offline applications like post-mortem analysis and finding of the fault location. In order to get the measurement data required for various applications, PMUs have to be deployed in a power system in an optimal way so that sufficient information is collected at the least overhead. Minimum number of PMUs required for different online applications would be different from that required for finding the location of a fault in a power system. A linear programming based method for finding out the minimum number of PMUs and their placement, in order to locate any fault in a power system, is presented in this paper. Modeling of zero injection bus is also considered. Simulation results for the IEEE 14 bus and 30 bus systems are reported.

**50. Thasha McVey, Department of History, NMSU**  
*Health Reform: We've Been Here Before*

There has been a lot of focus lately on the health care system in America. Consequently, this is not a new suggestion. The health care industry has constantly been changing, reforming and evolving in this nation since its birth. Health care reform has been on the legislative docket longer than most Americans are expected to live. This research examines the history of American health reforms during the 20th century.

**51. Tiffany Holder, Department of History, NMSU**  
*Using Internet Communication to Market Museums*

The age we live in has become increasingly technologically driven. To be a successful business, organization, and even individual you must have a website. But these days communication over the internet is not limited to websites alone; Twitter, Facebook, Myspace, Youtube, Flickr, and LinkedIn are all communication forums utilized through the internet. These sites may have started for simple communication networks between individuals, but have evolved into a way for associates to network and for businesses and organizations to advertise. A museum can be thought of as a business that supplies knowledge to the public. The public spends more and more time on the internet for work and pleasure. If a museum wishes to compete in the business world then they must join the communication wave. Many large museums such as the Smithsonian and the Chicago Field Museum have already jumped on the train with Twitter, Facebook, and Flickr. Many have even advanced beyond the basics, creating podcasts to accompany tours or applications on portable media devices to be used as a hand-held tour guide. Many have RSS (Really Simple Syndication) web feed formats used to publish frequently updated works, keeping

the public informed on blog or news updates. In order to compete with more popular leisure activities, museums must integrate new media methods into their current marketing strategies. The key to the use of these media forums to market museums is a combination of them, allowing them to attract and keep the public interested in the museum.

**52. Victor Valdivia, Department of Linguistics, University of New Mexico (UNM)**

*Non-normative Spanish Se-constructions. A functional approach*

In this paper, I will analyze non-normative agreement in Spanish Impersonal constructions such as *Se descubrieron a individuos que comercian con droga* 'Some persons were caught dealing drugs', in which the verb agrees with the noun *individuos* even if this is marked as an object by the preposition *a*. While Spanish constructions with SE have been widely studied, researchers have paid little attention to the phenomenon formerly described. When mentioned, it is described as 'something that some speakers do' or as a linguistic error. Contrary to such position, I argue that the construction occurs in actual communication because speakers use it to solve a communicative need. Furthermore, the fact that the agreement occurs not only in spontaneous spoken language, but also in written, highly organized, language, indicates that it is less marginal than grammarians would like to think. Hence, this paper aims to contribute to the understanding of the phenomenon. Data for the research come from "Corpus del español" ([www.corpusdelespanol.org](http://www.corpusdelespanol.org))

**53. Victor Munoz, Department of English, NMSU**

*The Elements of Existence in Gary Soto's The Elements of San Joaquin*

I will be presenting on my Master's Essay which is on Gary Soto's first book of poetry *The Elements of San Joaquin*. What I am focusing on is how in this particular collection Gary Soto unfolds the lives of the working class Mexican-Americans of the San Joaquin Valley to show how these people are not only subdued by the natural elements of the land but also by the elements of ordinary working-class existence. The unnamed speaker of the poems provides a collective voice for the voiceless that are unable to articulate their harsh realities. Though voiceless, their existence cannot be denied or ignored. Within these poems, Soto provides an insight into the lives of a Mexican-American community struggling with their own reality which involves oppression, violence, terror, indifference, and loneliness. The reason for Soto's intertwining of the natural and the social is to emphasize that the people, their lives, and their histories are all elements that are part of the San Joaquin Valley; the irony is that the people who give themselves to working the land and existing within the San Joaquin Valley will ultimately be consumed by it.

**54. Vanessa Macias, Biology Department, NMSU**

*Characterization of the role of TOR signalling in fecundity in the malaria mosquito, Anopheles gambiae*

In female anautogenous insects, a blood meal stimulates the transition into vitellogenesis (yolk protein synthesis) and egg production. Activation of the Target of Rapamycin (TOR) pathway has been shown to be essential in the midgut for the degradation of proteins in the blood meal to amino acids required for synthesis of yolk protein. The pathway is also key in the fat body for relaying the signal to activate vitellogenesis in response to amino acids. Presently, we report that inhibition of this pathway in *Anopheles gambiae*, the African vector of Malaria, by injection of double stranded TOR kinase RNA inhibits egg laying in response to a blood meal. TOR kinase knock-down mosquitoes are significantly dwarfed in their ability to deposit eggs en masse and individually. Dissection of 3 day post-blood meal females that failed to lay eggs shows that these mosquitoes do develop eggs in the ovaries but many more appeared to be only partially developed than observed in control knock-down mosquitoes ( $p=0.03$ ). This study highlights the importance of TOR signaling in mosquito egg production and suggests it as a potential target for Malaria vector control strategies.

**55. Venkatasiddhinagaraju Daram, Department of Chemical Engineering, NMSU**

*Removal of Chromium (VI) from aqueous solution using Pecan shell activated carbon as adsorbent*

Chromium (VI) belongs to the family of heavy metals and it is considered as one of the highly toxic pollutant in waste water streams. Chromium and its compounds are widely used in the leather tanning, electro-plating, anodizing baths and rinse waters. Pecan shells, one of the waste products from agricultural industry are used for the removal of chromium (VI) from waste water streams. Pecan shell activated carbon is produced by chemical activation of pecan shells with phosphoric acid followed by oxidation with air. Equilibrium studies were carried out at constant pH with carbonization temperature serving as the main parameter. Characterization studies of produced activated carbon were carried out using Nitrogen adsorption isotherms and BET surface area were determined and is found to be 555 m<sup>2</sup>/g, 822 m<sup>2</sup>/g, 1547 m<sup>2</sup>/g, 1432 m<sup>2</sup>/g for PS360, PS410, PS450 & PS500 respectively. The equilibrium isotherm data is well fitted using various isotherms and the maximum adsorption capacity for chromium is determined.

**56. Wes Smith, Department of Government, NMSU**

*Managing Public Wealth: A case study reviewing the planning process for expenditures of a Regional Recreation and Aquatic Center*

Accumulating public wealth is a popular option for promoting the quality of life for a community. Public wealth can come in the form of public use areas like convention centers, but also parks and recreational facilities. There are several ways to fund the design and construction of facilities that contribute to public wealth; however, many of these programs do not assist in funding the operation and management of the facilities as they are sources for capital improvement projects only. Introducing new projects like recreation centers are essential to economic development. For a firm to enter into a community there must be an attractive venue in which to settle down and open business. A community that offers more entertainment and leisure for its citizens is much more marketable to new business than a community with less to offer. Therefore, investing in capital projects that promote new business firms to locate in a community is justified by promoting economic development. This paper describes policy and economic conditions that serve as barriers to completing a capital improvement project via case study.

**57. Ying Xu, Department of English, University of New Mexico (UNM)**

*A Body of Troubled Site/Sight: Re-signifying Double Consciousness in Yung Wing's My Life in China and America*

Yung Wing, the first Chinese graduate from a distinguished American university (Yale, 1854), has interested many scholars. His connection with missionaries, his education in America, his involvement in the modernization of China in the late 19th century, including the Chinese Education Mission he launched in 1872, and his ambiguous citizenship have become the subject of many historians and scholars; however, the significance of his autobiography, *My Life in China and America* (1909), is not fully explored as the scholars of Asian American studies often dismiss Yung's work as either lacking "resistance" or falling into the category of the "writing of cultivated Chinese" who do not represent typical Asian American experiences. Situating Ying's writing in the socioeconomic and political contexts that shaped the construction of the text in the late nineteenth century and the early twentieth century, the paper argues that Yung's text should be read as a body of troubled Site/sight which sets an early model of self-assertion for later Asian American writers. By borrowing Du Bois's theory of "Double-consciousness," this paper will go beyond a paradigm of resistance and accommodation in its examination of the construction and interplay of double-consciousness in Yung's autobiography.