

Physics Newsletter
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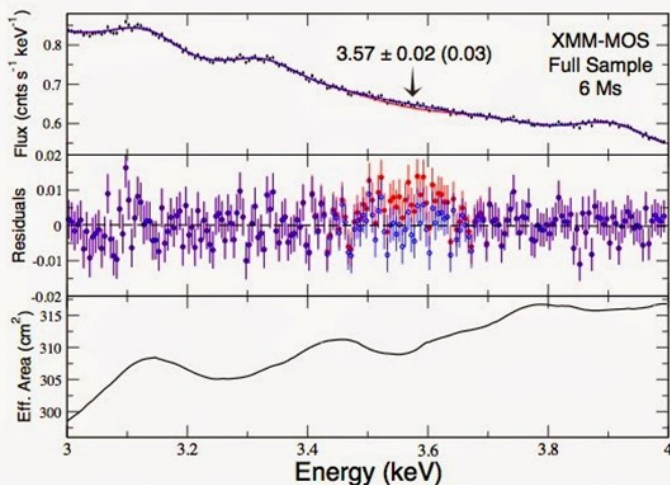
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PHYSICS PROFESSOR PRESENTS PAPER AT STATE CONFERENCE

Dr. Lionel Hewett, Chair of the Physics/Geosciences Department, presented a paper entitled “Has Dark Matter Finally Been Detected?” at the Spring 2015 Joint Meeting of the Texas Section of the American Physical Society, Texas Section of the American Association of Physics Teachers, and Zone 13 of the Society of Physics Students, held at Lee College, Baytown, TX, March 6, 2015. The presentation showed how recent observations of the X-ray radiation from two distant galaxies appeared to confirm Dr. Hewett’s theory of Time-Symmetric Cosmology, which predicted that dark matter should glow dimly in the near X-Ray region of the electromagnetic spectrum. Prior to the detection of this weak 3.5 keV X-ray emission line, dark matter had only been deduced through its gravitational effects upon the bending of light rays and the orbits of stars and galaxies.

His current research effort is directed toward answering some of the most puzzling questions of modern cosmology such as: What is dark energy, what is dark matter,



Experimental data showing the detection of a 3.57 keV X-Ray emission line that appears to come from the dark matter halo surrounding a distant galaxy.

and why is there more matter than antimatter in the universe?

These questions and others are addressed in Dr. Hewett’s Time-Symmetric model of cosmology which combines quantum mechanics and gravitation under the most extreme conditions of the creation of the universe. This model assumes that the universe began with a single creation event of zero spatial size and infinite mass-energy density. The symmetry of time surrounding this event along with the principles of quantum mechanics show



A large cluster of galaxies with a false color overlay (red and blue clouds) showing the distribution of dark matter as calculated from its gravitational bending of light rays.

that this primary creation event was followed almost immediately by an ensemble of secondary creation events that rendered nothing but primordial black holes of various sizes at a temperature near absolute zero. As these black holes evaporated through Hawking radiation, they produced the high temperature radiation that dominated our early universe and the excess of matter that is observed today .

Dr. Lionel Donnell Hewett’s other research interests have involved -

- 1) Einstein’s special and general theories of relativity and their applications to cosmology,
- 2) Solar energy, desiccant air condition, and zero-energy home designs,
- 3) The physics of towing hang gliders
- 4) Innovative techniques in teaching physics.

For more details, you can visit—

<https://www.tarleton.edu>

<http://users.tamuk.edu/hewett/>

MY JOURNEY OF PHYSICS...

BY DR. LIONEL HEWETT



Dr. Lionel Hewett

It was the summer of 1955, between my junior and senior year of high school, that I saw a fascinating, fifteen minute, “short subject” movie at one of the local motion picture theaters in Fort Worth, Texas. The topic of the movie was “Physics at the Massachusetts Institute of Technology (MIT)”. Prior to this movie, I had never heard of the word “physics”. But the movie was so utterly fascinating that I went home and asked my father, an engineer, if he had ever heard of physics. Naturally, he said, “Yes.” But when I told him I was interested in pursuing the subject, he said, “Well, that’s fine, but there is no room for a mediocre physicist”.

You see, prior to that summer I was a C student, but from that time on I became an A student. My goal was to attend MIT and become a high school physics teacher. Unfortunately, my one year of academic excellence was inadequate for me to be admitted to MIT, so my father and I looked for a school in Texas that was noted for its physics program. Our search showed that the two highest ranking schools in Texas for a physics degree were the University of Texas at Austin (UTA) and the Texas College of Arts and Industries in Kingsville (A&I). When we visited each campus, we found that UTA had enormous classrooms with unavailable faculty (housed in brick buildings) and that A&I had small classrooms with a physics chairman, Dr. Olan E. Kruse, willing to spend his personal time giving us a tour of the campus and departmental facilities (housed in a relocated WWII army barracks). Needless to say, I chose to attend A&I.

Four years later, in 1960, I graduated Suma Cum Laude and was offered a 1-year scholarship to MIT or a 3-year scholarship through the Ph. D. to the Missouri School of Mines and Metallurgy at Rolla. At that time my goal had changed to teaching physics at the university level as soon as possible, so I accepted the offer at Rolla. Since I was unable to finish my degree in three years, I accepted another 1-year scholar-

ship at Rolla leaving the school with an ABD (All But Dissertation) degree. I came back to Kingsville and began my teaching career while finishing my dissertation. Then, at the end of the summer 1965, I graduated from the University of Missouri at Rolla with a Ph.D. degree in Engineering Physics and have been teaching physics at Texas A &M University, Kingsville ever since.

My research interests have varied considerably throughout my teaching career, from the physics of towing hang gliders to the practical applications of Solar Energy. As a result, I have been recognized by



Dr. Lionel Hewett's house at Colorado, under construction

both the United States and the International hang gliding organizations for my contribution to the safety of towing hang gliders, and I have designed and am building a zero-energy home for retirement in Colorado that is powered exclusively by solar and wind energy.

But my greatest love for physics research throughout the years has been the pursuit of knowledge about the fundamental laws of nature and how the universe came into existence. Therefore, I have developed a theory called “Time-Symmetric Cosmology” that assumes the universe began exactly as it appears to begin, namely, as a single point singularity in space-time. This theory predicts how the universe began; why it is homogeneous, isotropic, and flat (without the assumption of inflation); and why it contains dark energy, dark matter, and the excess of normal baryonic matter that we are able to see today.

PHYSICS DEPARTMENT FACULTY NEWS



Dr. Subbarao Yelisetti
Assistant Professor

control on understanding natural hazards such as earthquakes and tsunami. His research also focuses on the detailed sediment structure in basins and in the accretionary sediment wedge at subduction zones, particularly the frozen methane gas hydrate layer which is found within a few hundred meters of the seafloor and represents a potential massive energy resource and contributor to global climate change.

Dr. Yelisetti's current and ongoing research projects involve (i) obtaining the detailed crustal structure in the region of 2012 Haida Gwaii earthquake (M7.7), the second largest instrumentally recorded earthquake in Canada, (ii) characterizing the sub-seafloor structure associated with permafrost gas hydrates and fluid migration in the Arctic Beaufort Sea region, and (iii) characterizing the vergence structure along the seismically active Cascadia subduction zone, using various types of geophysical data. For more information, visit : <http://web.uvic.ca/~subbarao/>

Dr. Yelisetti is teaching College Physics-1 this Fall while organizing his geophysics lectures and planning his research.

Prior to joining TAMUK, Dr. Yelisetti was working as a postdoctoral fellow at the Pacific Geoscience Center in Sidney, Canada. He obtained his PhD degree in geophysics/seismology in 2014 from University of Victoria, Canada. His thesis focused on examining the detailed geological structure of the northern Cascadia margin. He also obtained MTech degree in mineral exploration in 2008 and MSc in physics in 2006 from University of Hyderabad, India. He obtained BSc degree from Acharya Nagarjuna University, India with a specialization in mathematics, physics and chemistry.

Dr. Subbarao Yelisetti has accepted our petrophysics/geophysics tenure track position starting this Fall, 2015. His research interests involve plate tectonics and geophysical structure at continental margins. Using various types of geophysical data, his research examines crustal-scale structures of the margins which provide important



Dr. Hisham Albataineh
Assistant Professor

received his M.Sc. and Ph.D. in Experimental Nuclear and Particle Physics from New Mexico State University, USA. Prior to joining Texas A&M University-Kingsville (TAMUK), Dr. Albataineh had been involved in different research groups.

He did the first measurement of a transverse single spin asymmetry of open heavy flavor at the PHENIX experiment using polarized proton-proton collisions at center-of-mass energy 200 GeV at Brookhaven National Laboratory. As a member of the sub-atomic group at Los Alamos National Laboratory, he worked on designing and building pixel planes for the silicon vertex detector for the PHENIX experiment; this work took place at Fermi National Laboratory. For his post-doc,

Dr. Albataineh worked for the "Laboratoire de Physique Corpusculaire (University Blaise Pascal, France)" and Thomas Jefferson Laboratory on the second generation of the Deep Virtual Compton Scattering experiment. Dr. Albataineh joined TAMUK in June 2011 as director for research and graduate studies at the Frank H Dotterweich College of Engineering where he started teaching nuclear/mechanical engineering classes. Currently he holds a joint position between the Physics Department and the Mechanical Engineering Department.

Dr. Hisham Albataineh joined the physics program in Fall 2014. He received his B.Sc. in Physics (with minor in mathematics) from Yarmouk University, Jordan. He received his first M.Sc. in particle physics from Aligarh Muslim University, India. He also

PHYSICS DEPARTMENT FACULTY NEWS



Mrs. Cherrie Nelson
Lecturer

Mrs. Cherrie Nelson joined the Physics Program at TAMUK in the fall of 2015. She received her Master's Degree in Physics Education from the Western Governors University in 2014. She completed her bachelor's from

General Science Grandview University .

Prior to TAMUK, she taught physics in high school at Aransas Pass, Texas. She holds a Master Teacher License for the state of Iowa, where the requirement for teaching requires a 3.0 in each subject matter.

Her interests are teaching science. She researches and explores new methods for improving test scores and helping students achieve their goals.

Her hobbies include star gazing.

On Oct 20, 2015 Driscoll Middle School in Corpus Christi held a Science Night for family and students at their school. Texas A & M was invited to join in this celebration and show off the stars and planets with a telescope and star globes.

The telescope was another huge hit; as students waited behind their teachers to see the planets Jupiter and Moon in the night sky. Late that night Mrs Cherrie left the school with a promise to return soon for another sky viewing.

Students and parents were informed that different patterns arriving in the night sky is a way to determine the time of year. Most were aware of the stars crossing the sky, but did not realize that the stars follow a set and predictable pattern.

OUR FRESHMEN WHO JOINED THE NEW PHYSICS PROGRAM



Thomas Cruz

We have three new physics majors who are the first freshmen to enroll in our new Texas Physics Consortium (TPC) program .

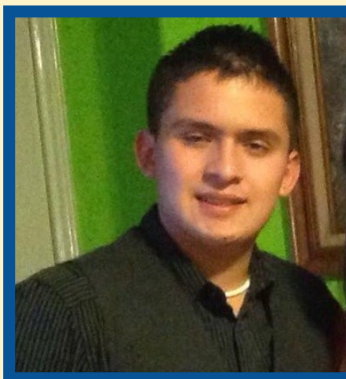
Thomas Cruz came to us from Corpus Christi, **Edson Estrada** came from Laredo, and **Angel Gonzalez** came from Houston. We are

overjoyed to have them with us and hope everyone will join us in welcoming them to our campus.

PHYSICS SCHOLARSHIP AWARDED

The following physics majors were awarded scholarships for the Fall 2015 semester by the Department of Physics and Geosciences:

Angel Gonzalez received the \$500 Alumni Physics Scholarship and the \$500 "Olan Kruse Scholarship".



Edson Estrada

Edson Estrada received the \$500 "Walter Sells Scholarship" and the \$500 "Alumni Physics Scholarship". This scholarship fund is offered each semester during the regular school year for a student majoring in Physics who has completed less than 60 semester credit hours at the time of the award.

We are proud of these students and are looking forward to seeing their continued academic achievements in the future.

SPS STUDENTS ATTEND THE SPRING 2015 JOINT PHYSICS CONFERENCE

The Texas A&M University – Kingsville’s ‘Society of Physics Students’ chapter recently traveled to Baylor University for the Fall 2015 Joint Meeting for the American Physical Society (APS), American Association of Physics Teachers (AAPT), and Zone 13 Society of Physics Students (SPS). SPS club members were able to attend a variety of presentations concerning topics from cancer cell location, to single photon transport through an atomic chain. One particularly interesting presentation, given by Dr. Donald Olson of Texas State University, covered the Tacoma Narrows Bridge which failed 75 years ago. Tracker software and detailed video analysis suggested that resonance was not the cause of failure as, has been widely accepted since the accident. Dr. Olson suggests that it was the twisting of the bridge which ultimately caused its failure. Another very interesting presentation was given by TAMUK’s own Erik Harwell covering Complex Matter Space and introduced Hilbert Space. Harwell’s presentation ended with a concept suggesting travel faster than the speed of light being theoretically possible. Students also attend several hands-on workshops, one of which explained how rust other corrosion is removed from larger frames, such as the Eiffel Tower. The SPS members also had tour of the college during down time. Though there wasn’t a surplus of ‘down time,’ there was enough for some students to tour the campus. From groundbreaking research presentations, to relaxing with the two bears held in something similar to a zoo-enclosure where the university mascots are kept, this TAMUK senior highly recommends any interested students to join the SPS club .

- By John Thomas



Stating from left, Jennifer Benavides, Frank Ashley III, Gabriel Barrera, Kevin Valenzuela, Andres Camillo, Kezia Hilay, John Thomas, Cassandra Carrizales, Daniel Rodriguez, David Castillo, Steven Thomas, Andy Umoh, Christian Albear.

