



PHYSICS NEWSLETTER

November / December 2008

Volume 3, Issue 2

SPECIAL POINTS OF INTEREST :

- > **Our own Dr. Jay Dittmann, shown above, sports his Baylor Physics Fleece at the Baylor-Nebraska Football game in Lincoln. The green really shows up well against all that red.**
- > **The rumor that the wormhole demonstration was repeated again in Dr. Dwight Russell's Astronomy class is true and the event has been a topic of great discussion and much praise on the students' Facebook pages.**
- > **Remember our First Thursday Retiree Coffees, in the Physics Conference Room from 10:30–11:30 a.m. on the first Thursday of each month.**

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DEPARTMENT DEVELOPS OBSERVATORY PLAN

The Department is in the process of developing plans for an observatory to be located near campus. Recently, several faculty members visited a promising site at Baylor's Eastland Lakes facility, located 5 minutes from the main campus off University Parks drive. It is thought that the observatory building, dome, telescope, and telescope mount can all be purchased for a total in the range of \$100,000 – \$125,000.

Faculty members continue to dream about an on-campus planetarium. On October 27th, Dwight Russell and Greg Benesh met with Clarence Simmons, Principal of Waco High School, to view the old planetarium equipment located in Waco High. Since the planetarium has not operated in more than ten years, there is a possibility that some of the equipment may be available for purchase. The next challenge will be to locate a place on campus with a 20-ft high ceiling to accommodate the planetarium dome.

In addition, the Registration and Academic Records Office has approved our Curriculum Action Forms for new astronomy and astrophysics courses. Next, our new proposed degree plans must be approved by the College of Arts and Sciences Curriculum Committee.

ALUMNUS SPEAKS AT HOMECOMING

The Department hosted a visit by Baylor Physics Alumnus John Alred, who currently works at NASA Johnson Space Center as Deputy System Manager for Space Environments, Deputy System Manager for ISS M&P Lead, Non-metallic Materials Team, Materials & Processes Branch, NASA.

Dr. Alred gave a talk to a standing room only crowd of approximately one hundred people in room E.125 of the BSB on Friday, October 31, 2008. The talk was followed by a reception in the E.301 Tower Room and was part of the Department's Homecoming activities. Dr. Don Hardcastle, who was John's thesis advisor, was also in attendance and Dr. Alred's talk included many anecdotes about both the wisdom he learned from Dr. Hardcastle and hard lessons that NASA has learned in its space flight program, sometimes at the loss of life of its astronauts.

GRADUATE STUDENT NEWS & NOTES

Prasanga Palihawadana, as his masters thesis, studied the Total Electron Scattering Cross Sections (TCS) of several fluorocarbons which are important in plasma processing techniques. First he measured the TCS of Tetrafluoromethane, Trifluoromethane, Hexafluoroethane and Octafluorocyclobutane in the energy range 0.1 – 4.5 keV using a linear transmission technique. Based on these experimental TCS, an empirical formula is developed to predict the TCS of other simple fluorocarbons. He will be presenting these results at the APS 50th Annual Meeting of the Division of Plasma Physics in Dallas on November 17 – 21.

After the graduation he will be joining with one of the Australian universities to pursue his Ph.D.

Richard K. Obousy successfully defended his dissertation, entitled *Investigation into Compactified Dimensions: Casimir Energies and Phenomenological Aspects*, before his dissertation committee of Profs. Greg Benesh, Dwight Russell, Anzhong Wang, and his Ph.D. advisor, Dr. Gerald Cleaver. Richard's dissertation is based on a set of his publications:

Casimir Energy and Brane Stability.

by [Richard Obousy](#), [Gerald Cleaver](#) . BU-HEPP-08-15, CASPER-08-01, Oct 2008. 23pp.

[arXiv:0810.1096](#) [hep-th] Submitted to International Journal of Modern Physics A

A Non-Standard String Embedding of E8.

by [Richard K. Obousy](#), [Matthew B. Robinson](#), [Gerald B. Cleaver](#) . BU-HEPP-08-16, CASPER-08-06, Oct 2008.

[arXiv:0810.1038](#) [hep-ph] Submitted to Modern Physics Letters A

Putting the 'Warp' into Warp Drive.

by [Richard K. Obousy](#), [Gerald Cleaver](#) ([Baylor U.](#)) . Jul 2008. 11pp.

Submitted to Spaceflight

[arXiv:0807.1957](#) [physics.pop-ph]

Radius Destabilization in Five Dimensional Orbifolds Due to an Enhanced Casimir Effect.

by [Richard K Obousy](#), [Gerald Cleaver](#) ([Baylor U.](#)) . BU-HEPP-08-04, CASPER-08-01, May 2008.

[arXiv:0805.0019](#) [gr-qc] Submitted to Modern Physics Letters A

Warp Drive: A New Approach.

[Richard K. Obousy](#), [Gerald Cleaver](#) ([Baylor U.](#)) . Dec 2007. 6pp.

Journal of the British Interplanetary Society, September 2008, e-Print:

[arXiv:0712.1649](#) [gr-qc]

Anticipated Graduations in the near future:

- Matt Robinson (Ph.D.) - Dr. Gerald Cleaver
- Qiang (Bob) Wu (Ph.D.) - Dr. Anzhong Wang
- Andreas Tziolas (Ph.D.) - Dr. Anzhong Wang
- Michael Devin (Ph.D.) - Dr. Anzhong Wang
- Zhenbin (Ben) Wu (M.S.) - Dr. Lorin Matthews
- Te (Hart) Ha (M.S.) - Dr. Anzhong Wang
- Sammy Joseph (Ph.D.) - Dr. B.F.L. Ward
- Victor Guerrero (Ph.D.) - Dr. Walter Wilcox



Graduate Student Zhuanhao (Victor) Zhang is moving from TA to RA next semester due to funds made available from Dr. Truell Hyde.

OUT AND ABOUT ...

- Dr. Jay Dittmann presented "Where Have All the Physicists Gone?" at the University of Nebraska Physics Colloquium on October 23 to a crowd of about 80 professors, postdocs, and students. The presentation discussed perceptions of physicists, careers in physics, and what we can all do to help physics students succeed.
- Dr. Linda Olafsen traveled to the National Science Foundation to participate in a proposal review panel for the Electronics, Photonics, and Device Technologies program November 6-7.
- Dr. Jeffrey Olafsen and undergraduate student Kristin Combs had their paper, "Thermostatistics of a single particle on a granular dimer lattice," published in *Physical Review E*. *Phys. Rev E*, **78**, 042301 (2008).
- Dr. Ken Park submitted the following papers: "Evidence of Coulomb Blockade Behavior in a Finite, One-Dimensional Quantum Well," V. Meunier, M. H. Pan, F. Moreau, K. T. Park, and E. W. Plummer, paper submitted to *Proc. Natl. Acad. Sci. U.S.A.* (2008), and "Heteroepitaxial Thin Film of Iron Phthalocyanine on Ag(111)," K. Manandhar, K. T. Park, S. Ma, and J. Hrbek, paper submitted to *Surf. Sci.* (2008). In addition, he gave an invited talk entitled: "Surface Defects and Reconstructions of Titanium Dioxide," Physics Colloquium, at Texas A&M University, Commerce, October 30, 2008.
- Dr. Dwight Russell has agreed to serve as Graduate Faculty Credentials Committee member for physics.
- Dr. Walter Wilcox and collaborators have submitted an article to *Physical Review D*: Frank X. Lee, Scott Moerschbacher, and Walter Wilcox, Magnetic Moments of Vector, Axial, and Tensor Mesons in Lattice QCD, *Phys. Rev. D.*, to appear.

Baylor Proud recently highlighted the spring return of our Emeritus Professor, Dr. Robert Packard with the following:

If you attended Baylor in the last 50 years or so, chances are that you took "Packard Physics" — the introductory physics course for non-science majors taught by the legendary Dr. Robert Packard. Honored as one of Baylor's select Master Teachers in 1990 and voted the Collins Outstanding Professor by the senior class in 2001, Packard retired in 2002 after teaching at Baylor for 50 years. But this spring, "The Pack is Back," as flyers around the Baylor Sciences Building report. After six years away from the classroom, Packard will again teach one section of Physics 1405 next semester. It's said that a quarter of all Baylor alumni had Packard as a professor, which sounds about right. But then, when I was a student, it was also said that Packard was a top government official (perhaps CIA) who, should a national crisis arise, would be whisked away by helicopter to a top-secret location. Regardless, for half a century, spending a semester in "Packard Physics" was kind of a rite of passage here — an experience students shared with a good percentage of the other students at Baylor. I'm certainly glad I was able to enjoy his physics demonstrations and good humor for a few months, and I'm glad the students who take his class this spring will get to benefit from his talents, as well — as perhaps their parents and even grandparents did. Sic 'em, Dr. Packard!

And now a note from our Director of Graduate Studies, Dr. Walter Wilcox:

The graduate school is attempting to keep track of student articles accepted for publication from June 1, 2008 up to the present. Please submit this information to Marian when convenient. She will enter this data on the graduate school publications website. Alternatively, this can also be done by each faculty member, if you wish. The website is

<https://www.baylor.edu/graduate/index.php?id=57748>

If you log in you will notice that this site is not set up right. It lists the person who logs in as the student for one thing! Anna Henderson of the graduate school says to ignore this and instead list the student in the "Student Identification" fields. (She said they will fix this next week.) If you send the information to Marian, she will input this information for you. The information you should send to Marian or have available consists of:

1. The authors (identify the student or students to Marian)
2. The title
3. The journal
4. The date the article was accepted for publication
5. Any comments

(If more than one student is on a publication I suggest the paper be listed separately for each student and then a comment entered on these, pointing out they are the same publication.) They want the acceptance date rather than publication date since some students may graduate before an accepted article is published. (They are less concerned about the final publication citation.) They also ask for a telephone number; this can be your own office number or Marian's. Please let me (Walter Wilcox) know if you any questions on this procedure!

November 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6 Retiree Coffee 10:30	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26 Thanksgiving	27 Thanksgiving	28 Thanksgiving	29
30						

December 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4 Last T/Th Class Retiree Coffee 10:30	5	6
7	8 Last Day Of Classes	9 Study Day	10 Study Day	11 Final Exams	12 Final Exams	13 Final Exams
14	15 Final Exams	16 Final Exams	17 Final Exams	18 Admin Check for Graduation	19	20 Commencement
21	22	23	24	25 Christmas	26	27
28	29	30	31 New Year's Eve			