

To: Members of the Louisiana Tech University Senate

From: Z. D. "Dick" Greenwood

Date: April 30, 2010

Subject: University Senate Chair Award Information Packet

I am flattered to be the COES nominee for the 2010 Senate Chair Award and pleased to provide the following information that you requested. Thank you for your consideration.

Sincerely,

Dick Greenwood

1. List of Courses Taught with Teacher Evaluations

Year	Quarter	Course	Title	Rating
2009-2010	WINTER	PHYS 201	PHYSICS FOR ENGR AND SCI I	3.7
2009-2010	FALL	PHYS 201	PHYSICS FOR ENGR AND SCI I	3.1
2008-2009	SPRING	PHYS 201	PHYSICS FOR ENGR AND SCI I	2.0
2008-2009	WINTER	PHYS 201	PHYSICS FOR ENGR AND SCI I	3.3
2008-2009	FALL	PHYS 201	PHYSICS FOR ENGR AND SCI I	2.9
2007-2008	SPRING	PHYS 201	PHYSICS FOR ENGR AND SCI I	3.0
2007-2008	WINTER	PHYS 406	ELECTRICITY & MAGNETISM	4.0
2007-2008	FALL	PHYS 209	GENERAL PHYSICS I	3.2
2006-2007	SPRING	PHYS 201	PHYSICS FOR ENGR AND SCI I	3.0
2006-2007	WINTER	PHYS 423	PHYSICAL MECHANICS	4.0
		PHYS 521	THEORETICAL MECHANICS	3.8
2006-2007	FALL	PHYS 510	MATH METH IN PHYS	(Team taught: Not Rated)
2005-2006	SPRING	PHYS 202	PHYSICS FOR ENGR AND SCI II	3.1
2005-2006	WINTER	PHYS 406	ELECTRICITY & MAGNETISM	3.3
2005-2006	FALL	PHYS 202	PHYSICS FOR ENGR AND SCI II	3.3

2. Statement of My Beliefs Concerning the Importance Of Teaching, Research, and Community/University Service to the Overall Mission of the University

Teaching, research, and service are the three pillars upon which a successful academic career is built at Louisiana Tech University. While research opportunities at Tech first attracted me to come here, I have been deeply committed to, and have valued, the teaching and service opportunities that I have experienced.

Teaching should be the primary mission of a university faculty, and I give my teaching responsibilities at Louisiana Tech top priority.

As noted in the list of courses above, I have taught most frequently Phys 201 and 202. This is the calculus-based introductory physics sequence that is required of many engineering and science majors at Tech. These courses are of vital importance to these students because they form the foundation upon which all their subsequent courses are based. Therefore, I take the job of teaching this course very seriously. When I teach, I stress the fundamentals of physics just as a good coach stresses the fundamentals of a sport. On a daily basis, I challenge my students to apply the new material, by solving a problem based on that concept at home. I encourage them to visit me in my office that same day, if they are unable to work the problem. I also hold problem-solving sessions for my students, outside of normal class hours.

I have been involved in the development of the COES curriculum and, in particular, the successful integration of Phys 201 and 202 with math and engineering courses. I also have tried varying my format and style over the years in an effort to keep the courses fresh and interesting. My experiment with teaching Phys 201 in a PowerPoint lecture format, while allowing me to cover more material in the quarter, was viewed very negatively by my students in the spring of 2009 (see above). I adjusted my format accordingly and have seen the evaluations improve.

In addition, I have taught upper level courses to mostly physics majors. These courses are fun for me and for the students who are generally highly motivated. I also enjoy the teaching associated with mentoring my graduate students in their research projects. While this activity may be construed as research, for me it is an aspect of teaching that I truly enjoy and cherish.

This brings me to my thoughts on research. It is possible to do both very focused and interdisciplinary research at Louisiana Tech, and both should be encouraged. I consider my particle physics research to fall in the focused research category and my grid computing research, interdisciplinary. All research should be fundable, result in numerous publications and provide a platform for training and teaching graduate students.

I do experimental research in particle physics at the most fundamental level. The mysteries of the universe appear to be beautifully symmetric. The fact that we can explain much of what we know about the universe with just a few elegant equations fascinates me and motivates my research activities. To expand our knowledge of particle physics requires us to observe collisions of particles with higher energies than ever before. That is why I have been proud to be a co-PI on the Dzero experiment at Fermilab near Chicago and the team leader for Tech on the Atlas experiment at the Large Hadron Collider located at the CERN laboratory near Geneva, Switzerland.

A major challenge in performing these “big science” projects is the enormous amount of data generated at the experiments and the simulated data generated to understand these experiments. I have been fortunate to be at Tech which has been a major player and stakeholder in LONI, the Louisiana Optical Network Initiative. LONI is a fiber optic system that forms a network among six major research institutions in Louisiana and other national and international data centers at 40 gigabytes per second speeds. Also there are major computing facilities at each of the LONI sites. Because of the LONI computing infrastructure, my research has become interdisciplinary in nature: part physics and part computer science. A good deal of my research involves moving and processing enormous data sets on international computing grids and has

led to my involvement with the Open Science Grid and a regional grid organization, DOSAR, for which I have been the convener for the last five years.

My service work is tied to both my teaching and research activities. I find that serving on various university and college committees feeds into and draws from my teaching and research. Because of this, service activities are of great value to me professionally, helping to make me a more “university- and community-aware” professor. Because of my earlier research in nuclear physics, I have served for more than five years now as the Nuclear Safety Officer. This experience along with teaching a course on radiation safety has naturally led to my service on the University Radiation Committee and the BRIRC (Biosafety and Radionuclide Institutional Review Committee). Similarly, my involvement in LONI and high energy physics research has led to my appointment to the university research council. My community service work such as proctoring science district rally tests and judging the regional science fair has led from my teaching and research interests. Other committees I have served on, such as the COES Space Team, the COES Tenure and Promotion Committee, COES Leadership Team Associate and numerous graduate-student advising committees have all benefited from and add to my teaching and researcher roles.

3. A Selected List of Publications, Grants and Similar Activities

I am an author on over 175 publications during the last five years. Here is a selected list.

D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2009). Search for long-lived charged massive particles with the DØ Detector. *Phys Rev Lett*, 102, 161802.

D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2009). Evidence of WW+WZ production with Lepton+Jets final states in pp collisions at $\sqrt{s} = 1.96$ TeV. *Physical Review Letters*, 102, 161801.

Katz, D. S. et al. (2009) Louisiana: A Model for Advancing regional E-research Through Cyberinfrastructure. *Philos Transact A Math Phys Eng Sci.* 367(1897):2459-69.

The ATLAS Collaboration, G. Aad,..., Greenwood, Z. D., et al (2008). The ATLAS Experiment at the CERN Large Hadron Collider, *JINST* 3 S08003

D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). Observation of ZZ production in pp(bar) collisions at $\sqrt{s}=1.96$ TeV. *Physical Review Letters*, 101(17).

D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). Search for Higgs bosons decaying to tau pairs in ppbar collisions with the D0 Detector. *Physical Review Letters*, 101(7).

- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). Observation of the bc meson in the exclusive decay $bc \rightarrow j\psi\pi$. *Physical Review Letters*, 101(1).
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). Measurement of $t\bar{t}$ production cross section in $pp(\bar{p})$ collisions at $\sqrt{s}=1.96$ TeV. *Physical Review Letters*, 100(19).
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). A combined search for the standard model higgs boson at $\sqrt{s}=1.96$ TeV. *Physics Letters B*, 663(1-2), 26-36.
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2008). First measurement of the forward-backward charge asymmetry in top quark pair production. *Physical Review Letters*, 100(14).
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2007). Search for production of single top quarks via $t\bar{c}g$ and $t\bar{u}g$ flavor-changing-neutral-current couplings. *Physics Review Letters*, 99(19), 5.
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2007). Measurement of the $t\bar{t}$ production cross section. *Physical Reviews D*, D76(9).
- D0 Collaboration: Abazov, V,..., Sawyer, H. L., Greenwood, Z. D., Wobisch, M., et al (2007). Measurement of the λ_b lifetime using semileptonic decays. *Phys. Rev. Lett.*, 99.
- Kshitij Limaye,...,Greenwood, Z. D. et al (2005), Job-Site Level Fault Tolerance for Cluster and Grid Environments, Proceedings of Cluster 2005, IEEE International Conference on Cluster Computing, 27-30.
- B. Abbott,..., Greenwood, Z. D. et al (2005), Performance of an Operating High Energy Physics Data Grid: D0SAR-Grid, Int.J.Mod.Phys.A20:3874-3876.

Grant Activities

- Project/Proposal Title: Research in Experimental Particle Physics
 Source of Support: DoE Total Award Amount: \$614,000 07/01/08-06/30/11
- Project/Proposal Title: Request for Supplemental Funds for Louisiana Tech University...
 Source of Support: DoE Total Award Amount: \$32,860 09/01/09-08/31/10
- Project/Proposal Title: Collaborative Research: Accelerating Large Hadron Collider Computing with Graphics Processing Units (Pending)
 Source of Support: NSF PIF Total Award Amount: \$168,842 06/01/10-05/30/12

Project/Proposal Title: Neutron-Enhanced Calorimetry for Hadrons (NECH)
Source of Support: DoE Total Award Amount: \$39,740 09/01/06-08/31/09

Project/Proposal Title: Development of Forward Tracking and GEM-based Tracking...
Source of Support: DoE Total Award Amount: \$31,500 02/01/07-01/31/08

Project/Proposal Title: Development of PetaShare
Source of Support: NSF MRI Total Award Amount: \$634,270 06/01/06-05/31/09

Project/Proposal Title: A Louisiana Tech/Fermilab Partnership to Develop a D0 Silicon..
Source of Support: DoE/EPSCOR Total Award Amount: \$294,000 03/01/04-02/28/07

4. A Selected List of Community/University Service Activities

College Service

Research and Education Development (RED) Team, Committee Member

Safety Committee, Member

Tenure and Promotion Committee

University Service

BRIRC, (Biosafety and Radionuclide Instit. Review Committee) (September 1, 2008 - Present).

University Safety Committee, Committee Member, (September 1, 2007 - Present).

Research Council, Member (September 1, 2006 - Present).

LaSpace, Program Coordinator (September 1, 2004 - 2010).

Radiation Committee, Chairman (September 1, 2005 - Present).

Nuclear Safety Officer (September 1, 2005 - Present).

Community Service

North Louisiana High School Rally Proctor (held each March): 2005, 2007, and 2008

Professional Service

DOSAR, Convener, Workshop Organizer.

Open Science Grid Council, Committee Member, (September 1, 2008 - August 31, 2009).