

# Department of Physics & Astronomy

## PHYSICS NEWS FLASH

### **Dr. Jones Featured in ORAU Annual Report**

**March 21, 2007**

Assistant Physics Professor Kate Jones is one of the scientists profiled in the 2006 Oak Ridge Associated Universities (ORAU) Annual Report. Dr. Jones, whose research specialty is experimental nuclear astrophysics, is the principal investigator on the research using a beam of tin-132 ions conducted through the Center of Excellence for Radioactive Ion Beam Studies for Stewardship Science. This center is a partnership between ORAU's University Radioactive Ion Beam Consortium and Rutgers University. Also featured in the report is Sean Liddick, a post-doctoral researcher in nuclear physics.

Dr. Jones' work digs into the very stuff present at the start of the world: the nuclei found in the province of astrophysics--supernovae and the death of stars. Specifically, she studies the region around tin-132, whose nuclei comprise 50 protons and 82 neutrons and as such fall into a very special category of nuclei known as "doubly magic nuclei." This is because both 50 and 82 are considered magic numbers as they help make nuclei more stable by virtue of their architecture--they have closed shells. She used a neutron-rich beam of tin-132 produced at the Holifield Radioactive Ion Beam Facility (HRIBF) and then transferred a neutron to it to see what influence these doubly-magic properties have on tin-132's next-door neighbor, tin-133. Sean, in turn, works with tin-100, which is on the neutron deficient side of what's known as the "line of stability" in the world of nuclei studies. The principal investigator on that work is Dr. Robert Grzywacz, assistant professor of physics at UTK.

Dr. Jones is a graduate of the University of Surrey and joined the physics faculty in 2006.

The 2006 ORAU Annual Report is online at: <http://www.ornl.gov/about/pubs/06anrpt.pdf>.

More information on the Center of Excellence for Radioactive Ion Beam Studies for Stewardship Science is online at: <http://www.ornl.gov/stewardship/>.

And yet another physics connection: Dennis Hall (Ph.D., UT Physics, 1976) is a member of the ORAU Board of Directors. He is Associate Provost for Research and Graduate Education at Vanderbilt University. Dr. Hall is a member of the department's Board of Visitors.