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Host:
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Department of Physics & Astronomy

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Sponsored by the Center for Advanced Functional Materials at California State University, San Bernardino

Professor Sara Callori

California State University, San Bernardino

The Search for Novel Magnetic Phases in SrCoO3-δ

Transition metal oxides are an important class of materials as they exhibit a wide variety of both interesting and useful properties (e.g. magnetism, superconductivity, ferroelectricity) that can be controlled by external parameters. One important control parameter is strain, which can be manipulated in thin films samples. At first glance, SrCoO3 may seem relatively ordinary: in bulk it is a ferromagnetic metal, a behavior that has also been observed in moderately strained thin films. Recent theoretical work, however, has predicted a transition to an antiferromagnetic state under large compressive or tensile strains. This would also be accompanied by a metal-insulator transition as well as the emergence of a ferroelectric state. If this behavior can be experimentally realized, then "strain engineering" SrCoO3 will be an avenue to developing new types of multiferroic materials, where robust magnetism and ferroelectricity not only coexist, but are strongly coupled. In this talk I will discuss recent experimental investigations searching for the existence of these novel magnetic phases in thin films of SrCoO3-δ ($\delta < 0.2$) grown under varying strain conditions.

Sara Callori obtained her B.A. in Physics from New York University in 2007. After that she went to Stony Brook University in New York for graduate school, getting an M.A. in Physics in 2009 and a Ph.D. in 2013. Her Ph.D. research was focused on ferroelectric oxide thin films and superlattices. From there she held a joint post-doctoral position between the University of New South Wales and the Australian Nuclear Science and Technology Organisation in Sydney, Australia. Her post-doctoral work centered around using neutron scattering techniques to study magnetic thin films and multilayer systems. She has recently started as an Assistant Professor in the physics department at California State University San Bernardino.

Wednesday, October 7, 4:00 pm
136 Jorgensen Hall
3:45 pm – refreshments in Jorgensen Atrium