Gonzalo Alvarez-Campot

Research and Development Staff
Nanomaterials Theory Institute
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Education

Florida State University, Tallahassee, FL	Physics	Ph. D., 2004
University of Montevideo, Uruguay	Physics	M.S., 1999
University of Montevideo, Uruguay	Physics	B.S., 1996

Professional Experience

2008–present	R&D Staff Scientist, Computational Materials Science and Center for Nanophase Materials Sciences, ORNL
2006–2008	R&D Associate, Computational Materials Science and Center for Nanophase Materials Sciences, ORNL
2004–2006	Wigner Fellow, ORNL
2000–2004	Graduate Research Assistant, University of Montevideo, Uruguay
1996–2000	Research Assistant, University of Montevideo, Uruguay

Professional and Synergistic Activities

1996–2000	Peer Reviewer: *Physical Review B* and *Physical Review Letters*
2000–2001	Teaching Assistant, Physics Department, Florida State University
1996–2000	Teaching Assistant, Physics Department, University of Montevideo, Uruguay and University of Montevideo, Uruguay

Honors and Awards

2008	Gordon Bell Prize, team award
2004–2006	Eugene P. Wigner Fellowship, ORNL
2004	Outstanding Dissertation in Magnetism Award granted by the Topical Group on Magnetism of the American Physical Society

Research Interests

Overarching goal of research is the theoretical and computational study of strongly correlated electron systems, and the understanding of the complexity that emerges from these systems at the nanoscale. Within this theme, research is comprised of classical systems, spin fermion models, and fully quantum mechanical models. In relation to classical systems, aluminum doped $CuFe0_2$ has shown important technological promise due to its multiferroic properties. The ground state properties of this system has been mapped and compared to observed neutron scattering measurements. Spin-fermion models has focused on the study of manganites and the understanding of the colossal magneto-resistive (CMR) effect. Research has fund that CMR is associated with short-distance correlations among polarons, above the spin ordering temperatures, resembling the charge ordered arrangement that appears at low-temperature. These polarons appear in states with nanoscale inhomgeneities that emerge from the

competing interactions in the system. Fully quantum systems included a developed DMRG^{++}, an implementation of the DMRG algorithm emphasizing generic programming using C^{++} templates.

Collaborations Outside ORNL During Past Two Years:
Elbio Dagotto, Shuai Dong, Adriana Moreo, University of Tennessee-Knoxville; Mark Jarrell, University of North Dakota; Juana Moreno, Florida State University; Florentin Popescu, Yukitoshi Motome, Aoyama Gakuin Univeristy, Japan; Rong Yu, University of Cincinatti

Graduate and Postdoctoral Advisors:

Graduate Advisor: Elbio Dagotto, Florida State University
Postdoctoral: Thomas Schulthess, ORNL

Thesis Advisor and Postgraduate-Scholar Sponsor:

Total Graduate Students Advised: 0
Total Postdoctoral Scholars Advised: 0