Thomas A. Maier

R&D Staff
Nanomaterials Theory Institute
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Education

University of Regensburg, Germany	Physics	Masters, *Highest Honors*, 1997
University of Regensburg, Germany	Physics	Ph.D., *Summa Cum Laude*, 2001

Professional Experience

2005–present	Research staff, Computer Science and Mathematics Division and Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2003–2005	Wigner Fellow, Computer Science and Mathematics Division, Oak Ridge National Laboratory
2001–2003	Postdoctoral Fellow, University of Cincinnati, OH

Professional and Synergistic Activities

1998–present	Member: American Physical Society and German Physical Society
2005–present	Proposal reviewer: National Science Foundation, Department of Energy and Research Council of Canada
2001–present	Journal reviewer: APS Journals, Nature Physics, IOP Publishing, Journal of the Physical Society of Japan

Honors and Awards

2008	ACM Gordon Bell prize for peak performance
2003	Wigner Fellowship, Oak Ridge National Laboratory
2001	W.C. Röntgen prize for successful young scientists
2001	OBAG Kulturpreis, award for outstanding dissertation

Research Interests

Primary objectives focus on the theoretical study of strongly correlated electron systems on a fundamental level and the many phenomena occurring in these materials. Examples include superconductivity, magnetism, phase separation and the rich phenomenology occurring in low dimensional systems. Thomas Maier's research has concentrated on the development and application of quantum cluster theories, in particular the Dynamical Cluster Approximation, a non-perturbative multi-scale many-body technique that treats the effects of correlations within a cluster of atoms explicitly, while approximating correlations beyond the cluster in a mean-field. Recent projects include studies of Hubbard and similar models to gain insight in the pairing interaction and the effects of disorder and inhomogeneities in cuprate superconductors, to study the enhancement of superconductivity in multi-layers composed of under- and overdoped cuprates, and to understand the gap structure and neutron scattering response in the new iron-pnictide superconductors.

Publications (Author of more than 50 articles in refereed journals and books):

Collaborations outside ORNL during past two years:
D. Poilblanc, CNRS, France; T. C. Schulthess, ETH and CSCS, Switzerland; M. Jarrell, Louisana State University; T. Saha-Dasgupta, Kolkata, India; O. Jepsen and O. K. Anderson, MPI Suttgart, Germany; X. Wang, Nanjing University, China; K. Tomko, Ohio Supercomputing Center; S. Graser, University of Augsburg, Germany; Z. Bai, S. Sarasov, and R. T. Scalettar, Unversity of California-Davis; D. J. Scalapino, Univeristy of California-Santa Barbara; A. Macridin, University of Cincinatti; H.-P. Cheng, and P.J. Hirschfield, University of Florida; T. Pruschke, University of Gottingen, Germany

Graduate and Postdoc Advisors:
Graduate Advisor: Prof. T. Pruschke (University of Regensburg)
PostDoctoral Advisor: Prof. M. Jarrell (University of Cincinnati)

Total Graduate Students Advised: 0
Total Postdoctoral Scholars Advised: 2