

# Fawaz Y. Hrahsheh

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## EDUCATION

Aug.2007-Present <i>PhD, Physics</i>	<b>Missouri University of Science &amp; technology</b> Advisor: Dr. T. Vojta, Thesis Title: Phase Transitions in Disordered Systems	Rolla, Missouri
Aug.2004-Aug.2006 <i>M.Sc., Physics</i>	<b>Jordan University of Science &amp; technology</b> Advisor: Dr. A. Obeidat, Thesis Title: Nucleation Rates of Methanol and Ethanol Using SAFT and PC-SAFT EOSs	Irbid, Jordan
Aug.1998-Aug.2002 <i>B.Sc., Physics</i>	<b>Jordan University of Science &amp; technology</b> Applied Physics	Irbid, Jordan

## TEACHING EXPERIENCE

Aug.2008-Present	<b>Missouri University of Science &amp; technology</b> TA: Lab-Phys. 23 & 24	Rolla, MO, USA
Sep.2005-Jun.2006	<b>Jordan University of Science &amp; technology</b> TA: Lab-Phys. 107	Irbid, Jordan

## RESEARCH EXPERIENCE

Sep.2010-Present <i>Advisor</i> <i>Fields</i>	<b>Missouri University of Science &amp; technology</b> Prof. T. Vojta - Quantum and Classical Phase Transitions in Disordered Systems - Superfluid-Mott-insulator quantum phase transition in optical lattice	Rolla, MO, USA vojtat@mst.edu
Jan.2008-Present <i>Advisor</i> <i>Fields</i>	<b>Missouri University of Science &amp; technology</b> Prof. G. Wilemski - Investigating the Nanophysics of Aerosol Particles Using Density Functional Theory - Molecular Dynamics of Aqueous Organic Nanodroplets Using Gromacs Package - Scaling Behavior and Gradient Theory of Nucleation Rates	Rolla, MO, USA wilemski@mst.edu
Sep.2004-Aug.2006 <i>Advisor</i> <i>Fields</i>	<b>Jordan University of Science &amp; technology</b> Dr. Abdalla Obeidat - Numerical Methods of Solving Classical and Non-Classical Nucleation Rates	Irbid, Jordan aobeidat@mst.edu

## COMPUTATIONAL SKILLS

<i>Simulations</i>	- Classical Monte Carlo Simulations - CT-Quantum Monte Carlo Simulations - Numerical Renormalization Group Theory - Molecular Dynamic Simulations	Several Algorithms Basics SDRG Gromacs Package
<i>Computations</i>	- Finite Element Analysis - Finite Difference Method	Course DFT and GT

## COMPUTER SKILLS

<i>Operating Systems</i>	Linux, Mac OS X, Windows
<i>Programming</i>	Fortran (MPI), Matlab, C++, Mathematica, Latex, html

## PROFESSIONAL SOCIETIES

American Physical Society

## PRIZES

2012	19th Annual Laird D. Schearer Prize	MS&T
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## PUBLICATIONS

## Refereed Research Articles

9. **F. Hrahsheh**, Rajesh Narayanan, José A. Hoyos and T. Vojta: *Strong-randomness infinite-coupling phase in a random quantum spin chain*, submitted to PRB, [arXiv:1310.4864](https://arxiv.org/abs/1310.4864).
8. **F. Hrahsheh** and T. Vojta: *Disordered bosons in one dimension: from weak to strong randomness criticality*, *Phys. Rev. Lett.* **109**, 265303 (2012).
7. **F. Hrahsheh**, and T. Vojta: *Anomalous elasticity in a disordered layered XY model*, *Phys. Scr.* **2012**, 014074 (2012).
6. **F. Hrahsheh**, J. Hoyos and T. Vojta: *Rounding of a first-order quantum phase transition to a strong-coupling critical point*, *Phys. Rev. B* **86**, 214204 (2012).
5. L. Demkó, S. Bordács, T. Vojta, D. Nozadze, **F. Hrahsheh**, C. Svoboda, B. Dóra, H. Yamada, M. Kawasaki, Y. Tokura and I. Kézsmárki: *Disorder promotes ferromagnetism: Rounding of the quantum phase transition in  $Sr_{1-x}Ca_xRuO_3$* , *Phys. Rev. Lett.* **108**, 185701 (2012).
4. C. Svoboda, D. Nozadze, **F. Hrahsheh** and T. Vojta: *Disorder correlations at smeared phase transitions*, *Europhys. Lett.* **97**, 20007 (2012).
3. **F. Hrahsheh**, H. Barghathi and T. Vojta: *Infinite- randomness criticality in a randomly layered Heisenberg magnet*, *Phys. Rev. B* **84**, 184202 (2011).
2. **F. Hrahsheh**, D. Nozadze and T. Vojta: *Composition-tuned smeared quantum phase transitions*, *Phys. Rev. B* **83**, 224402 (2011).
1. A. Obeidat, M. Gharaibeh, H. Ghanem, **F. Hrahsheh**, N. Al-Zoubi, G. Wilemski: *Nucleation Rates of Methanol Using the SAFT-0 Equation of State*, *ChemPhysChem* **11**, 3987 (2010).

## Proceedings

2. **F. Hrahsheh**, H. Barghathi, P. Mohan, R. Narayanan and T. Vojta: *Evidence for power-law Griffiths singularities in a layered Heisenberg magnet.*, Proceedings of the International Conference on Strongly Correlated Electron Systems 2010, *J. Phys. Conf. Series*, **273**, 012004 (2011)
1. David Nozadze, Christopher Svoboda, **F. Hrahsheh**, Thomas Vojta: *Modification of smeared phase transitions by spatial disorder correlations*. Proceedings of the XVII Training Course in the Physics of Strongly Correlated Systems 2012, [arXiv:1212.5962](https://arxiv.org/abs/1212.5962)

## Conference Contributions

## Talks

9. **F. Hrahsheh** and T. Vojta, *Disordered bosons in one dimension: from weak to strong randomness criticality*, APS March Meeting, Baltimore (21 Mar 2013)
8. G. Wilemski and **F. Hrahsheh**, *Fluctuating confinement of water in aqueous organic nanodroplets*, APS March Meeting, Baltimore (21 Mar 2013)
7. A. Obeidat, **F. Hrahsheh**, G. Wilemski, Harshad Pathak, and Barbara Wyslouzil, *Interpreting SAXS spectra of non-spherical nonane-water nanodroplets using a new particle form factor*, APS March Meeting, Baltimore (19 Mar 2013)
6. G. Wilemski, **F. Hrahsheh**, *Molecular dynamics of aqueous-organic binary and ternary nanodroplets with miscibility gaps*, 31<sup>st</sup> Annual Conference of the American Association for Aerosol Research, Minneapolis, MN, 10 October 2012.
5. G. Wilemski, **F. Hrahsheh**, *Molecular dynamics simulations of aqueous-organic binary and ternary nanodroplets*, Invited talk, University of British Columbia, Vancouver, Canada, 28 August 2012.
4. D. Nozadze, **F. Hrahsheh**, C. Svoboda and T. Vojta, *Composition-tuned smeared phase transitions*, 2012 Summer School on Quantum Monte Carlo: Theory and Applications, Urbana (23 Jul 2012)

3. **F. Hrahshch** and T. Vojta, *Novel critical point in the random quantum Ashkin-Teller model*, APS March Meeting, Boston (02 Mar 2012)
2. D. Nozadze, **F. Hrahshch**, C. Svoboda and T. Vojta, *Composition-tuned smeared phase transitions*, APS March Meeting, Boston (02 Mar 2012)
1. G. Wilemski and **F. Hrahshch**, *Molecular dynamics of binary and ternary nanodroplets with a miscibility gap*, APS March Meeting, Boston (Mar 2012)

**Posters**

4. B. Wyslouzil, H. Pathak, **F. Hrahshch** and G. Wilemski, *Nonspherical structure of aqueous organic nanodroplets*, APS March Meeting, Boston (Mar 2012)
3. **F. Hrahshch** and T. Vojta, *Power-law Griffiths singularities in a randomly layered Heisenberg magnet*, APS March Meeting, Dallas (Mar 2011)
2. G. Wilemski, **F. Hrahshch** and A. Obeidat, *Scaling of Nonclassical Nucleation Rates of Methanol*, APS March Meeting, Dallas (Mar 2011)
1. P. Mohan, R. Narayanan, **F. Hrahshch**, H. Barghathi and T. Vojta, *Infinite randomness and quantum Griffiths effects in a classical system: the randomly layered Heisenberg magnet*, 2010 International Conference on Strongly Correlated Electron Systems, Santa Fe (30 Jun 2010)

**REFERENCES**

<b>Dr. Thomas Vojta</b>	1315 N. Pine Street, Rolla, MO 65409-06403, USA	(573) 341-4793	vojtat@mst.edu
<b>Dr. Gerald Wilemski</b>	1315 N. Pine Street, Rolla, MO 65409-06403, USA	(573) 341-4409	wilemski@mst.edu
<b>Dr. Abdalla Obeidat</b>	1315 N. Pine Street, Rolla, MO 65409-06403, USA	(573) 308-5505	aobeidat@mst.edu
<b>Dr. Paul Parris</b>	1315 N. Pine Street, Rolla, MO 65409-06403, USA	(573) 341-4790	parris@mst.edu