

Dalini Maharaj

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Date of birth: 19th November, 1989
Nationality: Trinidadian

PhD Student

McMaster University
Department of Physics and Astronomy

Profile

I am currently a physics PhD student and teaching assistant at McMaster University working under the supervision of Prof. Bruce D. Gaulin. My research focus is on frustrated magnetism, within the sub-field of condensed matter physics. I have been fortunate to conduct numerous neutron and X-ray scattering experiments at a variety of facilities around the world. Being an active member of the global neutron scattering community has given me the chance to interact closely with senior and established scientists within the field, as well as attend related conferences. These experiences have enhanced my communication skills. My teaching assistantship duties at McMaster University have also contributed to this attribute. My role as Chair of the inaugural *2017 Neutron Scattering GRS* has contributed to the development of my organizational skills and ability to negotiate and navigate social situations. In addition, it has instilled in me, a firm sense of responsibility, attention to detail and a capacity to work hard under pressure. I possess excellent verbal and written communication skills and am able to relate to a wide range of people, as reflected in my varied experiences. My term as a PhD student will end in September 2018 and I intend to further pursue a career in neutron scattering sciences.

Current Activities

PhD Student, McMaster University, Hamilton, ON – 2014 - Present

I currently utilise neutron scattering techniques to investigate low lying magnetic excitations in rare-earth titanates and double perovskites which are families of frustrated magnets.

Teaching Assistant, McMaster University, Hamilton, ON – 2012 - Present

I have been involved with preparing and presenting lecture style tutorials and laboratory sessions to undergraduate physics students. I have also graded assignments and invigilated examinations.

Education

McMaster University; Hamilton, ON – MSc, Physics 2014

Supervisor: Prof. B. D. Gaulin

Thesis title: "*Neutron Scattering of the Frustrated Magnets Ba₂YOsO₆ and Yb₂Ti₂O₇*"

University of Toronto; Toronto, ON – Hon. BSc, Physics 2012

Research Positions

Research Project Course, PHY 471Y, University of Toronto

Supervisor: Prof. S. Julian

Description: Performed magnetic susceptibility measurements of rare-earth compounds.

Centre for Free Electron Laser Science, DESY, Hamburg, Germany 10/2010 - 08-2011

Supervisors: Prof. R. J. Dwayne Miller & Dr. Regis Gengler

Description: I was involved in materials synthesis and produced thin films of functionalized graphene using the Langmuir-Blodgett technique, for femtosecond electron diffraction studies.

Awards

The International Excellence Award (2013-2014)

Awarded by: McMaster University

Professional Activities

Chair, *2017 Neutron Scattering Gordon Research Seminar (GRS)*, Hong Kong University of Science and Technology, Hong Kong, SAR, China - August 2017

Tutor, *The Croucher Summer Course on Neutron Scattering*, City University of Hong Kong, Hong Kong, SAR, China - August 2016

Scientific Development

NIST Neutron Summer School, NIST Center for Neutron Research, Baltimore, MD, USA - June 2013

National School on Neutron and X-Ray Scattering, Oak Ridge National Laboratory and Argonne National Laboratory, USA - August 2013

Conferences

2017 Neutron Scattering Gordon Research Conference (GRC), Hong Kong University Science and Technology, Hong Kong, SAR, China - August 2017
Role: Poster Presenter

American Conference on Neutron Scattering, Long Beach, CA, USA - August 2016
Role: Poster Presenter

Canadian Institute for Advanced Research Quantum Materials Summer School (CIFAR QMSS) and Main Meeting, Toronto, ON, Canada - April 2016

APS March Meeting, Baltimore, MD, USA - March 2016
Role: Speaker

Neutron Scattering Gordon Research Conference (GRC), The Chinese University of Hong Kong, Hong Kong, SAR China - June 2015
Role: Poster Presenter

Canadian Institute for Advanced Research Quantum Materials Summer School (CIFAR QMSS) and Main Meeting, Vancouver, BC, Canada - May 2015

APS March Meeting, San Antonio, TX, USA - March 2015
Role: Speaker

American Conference on Neutron Scattering, Knoxville, TN, USA - June 2014
Role: Poster Presenter

Canadian Institute for Advanced Research Quantum Materials Summer School (CIFAR QMSS) and Main Meeting, Montreal, QC, Canada - May 2014

APS March Meeting, Baltimore, MD, USA - March 2013

Canadian Institute for Advanced Research Quantum Materials Summer School (CIFAR QMSS) and Main Meeting, Vancouver, BC, Canada - May 2013

Centre For Free Electron Laser Science (CFEL) Symposium, Sylt, Germany - March 2011

Publications

C. M. Thompson, C. A. Marjerrison, A. Z. Sharma, C. R. Wiebe, D. D. Maharaj, G. Sala, R. Flacau, A. M. Hallas, Y. Cai, B. D. Gaulin, G. M. Luke, and J. E. Greedan. *Frustrated Magnetism in the Double Perovskite $\text{La}_2\text{LiOsO}_6$: A comparison with $\text{La}_2\text{LiRuO}_6$* . Phys. Rev. B, 93, 014431, (2016).

C. A. Marjerrison, C. M. Thompson, G. Sala, D. D. Maharaj, E. Kermarrec, Y. Cai, A. M. Hallas, M. N. Wilson, T. J. S. Munsie, G. E. Granroth, R. Flacau, J. E. Greedan, B. D. Gaulin, and G. M. Luke. *Cubic Re^{6+} ($5d^1$) Double Perovskites $\text{Ba}_2\text{MgReO}_6$, $\text{Ba}_2\text{ZnReO}_6$ and $\text{Ba}_2\text{Y}_{2/3}\text{ReO}_6$: Magnetism, Heat Capacity, μSR and Neutron Scattering Studies and Comparison with Theory*. Inorg. Chem, 55, 10701-10713, (2016).

J. Gaudet, A. M. Hallas, D. D. Maharaj, C. R. C. Buhariwalla, E. Kermarrec, N. P. Butch, T. J. S. Munsie, H. A. Dabkowska, G. M. Luke, and B. D. Gaulin. *Magnetic evolution and domain selection in the XY pyrochlore antiferromagnet $\text{Er}_2\text{Ti}_2\text{O}_7$* . Phys. Rev. B, 94, 060407 (2016).

E. Kermarrec, C. A. Marjerrison, C. M. Thompson, D. D. Maharaj, K. Levin, S. Kroecker, G. E. Granroth, R. Flacau, Z. Yamani, J. E. Greedan, and B. D. Gaulin. *Frustrated FCC antiferromagnet Ba_2YOsO_6 : Structural characterization, magnetic properties and neutron scattering studies*. Phys. Rev. B, 91, 075133, (2015).

J. Gaudet, D. D. Maharaj, G. Sala, E. Kermarrec, K. A. Ross, H. A. Dabkowska, A. I. Kolesnikov, G. E. Granroth, and B. D. Gaulin. *Neutron spectroscopic study of crystalline electric field excitations in stoichiometric and lightly stuffed $\text{Yb}_2\text{Ti}_2\text{O}_7$* . Phys. Rev. B, 92, 134420 (2015).

E. Kermarrec, D. D. Maharaj, J. Gaudet, K. Fritsch, D. Pomaranski, J. B. Kycia, Y. Qiu, J. R. D. Copley, M. M. P. Couchman, A. O. R. Morningstar, H. A. Dabkowska, and B. D. Gaulin. *Gapped and gapless short-range-ordered magnetic states with $(1/2, 1/2, 1/2)$ wave vectors in the pyrochlore magnet $\text{Tb}_{2+x}\text{Ti}_{2-x}\text{O}_{7+\delta}$* . Phys. Rev. B, 92, 245114, (2015).

Languages

- English

Fluent

- German

Intermediate written and oral skills

- French

Basic written and oral skills