

SPENCER N.G. AXANI

saxani@mit.edu

May 28, 2016

65 Brookline Apt. 1
Cambridge, MA USA
02139
+1 (617) 852-8330

Massachusetts Institute of Technology
Department of Physics
26-570

Publications

- June 2015 **KPipe: “A Decisive Disappearance Search at High- Δm^2 with Monoenergetic Muon Neutrinos**
Physical Review D 92.9 (2015): 092010.
- Oct. 2015 **KPipe: “KPipe: a decisive test for muon neutrino disappearance”**
arXiv preprint arXiv:1510.06994 (2015).
- Oct. 2015 **IsoDAR: “The IsoDAR high intensity H_2^+ transport and injection tests”**
Journal of Instrumentation 10.10 (2015): T10003.
- Dec. 2015 **IsoDAR: “A High Intensity H_2^+ Multicusp Ion Source for an Isotope Decay-at-Rest Experiment, IsoDAR”**
Review of Scientific Instruments 87.2 (2016): 02B704.
- Dec. 2015 **IsoDAR: “Preliminary design of a RFQ direct injection scheme for the IsoDAR high intensity H_2^+ cyclotron”**
Review of Scientific Instruments 87.2 (2016): 02B929.

Education

- June. 2014 – present **Ph.D Physics**
Massachusetts Institute of Technology, Boston, MA USA
Expected graduation: April 2018
- Sep. 2009 – Apr. 2014 **B.Sc. Honors Physics**
University of Alberta, Edmonton, AB Canada
Graduated April 2014
- Sep. 2005 – Apr. 2008 **Power Engineering Technologies**
Southern Alberta Institute of Technology, Calgary, AB Canada
3rd Class Power Engineer
- Sep. 2002 – Jun. 2005 **High School**
Lacombe Composite High School, Lacombe, AB Canada
Bilingual Honors High School Diploma

Recent Presentations

- Oct. 2015 **IsoDAR Review**
Erice, Sicily Italy
“KPipe: a decisive test for muon neutrino disappearance”
- Aug. 2015 **International Conference on Ion Sources**
New York City, New York USA
“A High-Intensity H₂⁺ Multicusp Ion Source for an Isotope Decay-at-Rest Experiment, IsoDAR ”
- Aug. 2015 **Meeting of the Division of Particles and Fields of the American Physical Society**
University of Michigan Department of Physics
Ann Arbor, Michigan USA
“KPipe: a decisive test for muon neutrino disappearance”
- June. 2015 **US Particle Accelerator School: Education in Beam Physics and Accelerator Technology**
Rutgers University, New Jersey USA
“The design of a non-destructive cyclotron radial probe”
- April 2015 **American Physical Society: Physics April Meeting**
Baltimore, Maryland USA
”RFQ injection into a cyclotron”
- April. 2014 **“An examination into the variations of the β -decay rate of ⁶⁰Co”**
University of Alberta, Edmonton, AB Canada
Honors Thesis end-term presentation and summer research symposium.

Work Experience

- June. 2014 – present **Graduate Research Assistant (IsoDAR)**
Massachusetts Institute of Technology, Boston, MA USA
Project: Isotope Decay-at-Rest, IsoDAR
Currently developing a high intensity neutrino source using an H_2^+ cyclotron beam and Beryllium target to investigate the recent sterile neutrino anomalies.
- Apr. 2012 – Apr. 2014 **Research Assistant (IceCube)**
University of Alberta, Edmonton, AB Canada
Project: Precision IceCube Next Generation Upgrade, PINGU
Investigated the Δm_{23}^2 versus θ_{23} parameter space to determine the feasibility of PINGU's ability to resolve θ_{23} from maximal mixed.
- Apr. 2011 – Apr. 2014 **Research Assistant (Low Background Counting Facility)**
University of Alberta, Edmonton, AB Canada
Project: Cosmic Ray Veto Shielding for the High Purity Germanium Detector
Development and deployment of a high purity germanium detector for specimen radio-purity analysis at the University of Alberta.
- Apr. 2010 – Apr. 2011 **Research Assistant (Sudbury Neutrino Observatory, SNO+)**
University of Alberta, Edmonton, AB Canada
Project: SNO+ Acrylic Vessel Background Removal
Designed, built and tested a robotic sander to remove 2 microns from the inner surface of the acrylic vessel for the SNO+ experiment.
- Apr. 2008 – Apr.2014 **Control Center Operator / Shift Engineer**
University of Alberta Hospital, Edmonton, AB Canada
In charge of building operations. Routinely involves handling emergency situations and coordinating efforts with various hospital departments.

Awards and Scholarships

May 2016	URA Award \$1,000
June 2015	Henry W Kendall (1955) Fellowship \$8,829
Oct. 2014	MIT International Science and Technology Initiatives, \$1,000
Sep. 2014	Frank Fellowship, \$34000
Apr. 2014	NSERC Undergraduate Student Research Award, \$4500
Apr. 2014	CGSM Edmonton (could not accept), \$17,500
Jan. 2013	Jason Lang Scholarship, \$3000
Dec. 2012	Barry Harrold Memorial Award, \$2000
Jan. 2009 – 2014	Dean's Honor Roll, University of Alberta
Sep. 2005 – Apr. 2008	HEAP MEGlobal Scholarship, \$6000
Sep. 2006 – Sep. 2014	Jason Lang Scholarship, \$4000
Sep. 2005	Rutherford Scholarship, \$2500
Sep. 2003	Science Award, Dow Chemicals
Sep. 2002 – Apr. 2005	Lacombe Composite High School Honors Roll

Languages

English	Fluent Native
French	Intermediate Secondary (Bilingual Diploma)

Specialized Skills

- Simulations: GEANT4, Comsol, Inventor, AutoCAD, SolidWorks, LabView
- Hardware: metal working, electronics circuitry, instrumentation, carpentry
- Programming: Cern ROOT, Python, C++, Mathematica, MATHLAB, LaTeX

Research Interest

Neutrinos, dark matter, CP violation, accelerator physics, particle detector development, Beyond Standard Model physics, quantum mechanics interpretation, mathematical modeling, history of science, nuclear physics, gamma-ray spectroscopy.