

Richard Knoche

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EXPERIENCE

University of Maryland, Physics Department

- Graduate Research Assistant 2011 – Present
 - Developed ground breaking techniques that produced the world's most accurate and most precise calibrations of a dark matter detector.
 - Created position dependent signal corrections that improved detector performance.
 - Automated the extraction of hundreds of data features from calibration data.
 - Directed on-site detector operations as Deputy Science Coordination Manager.
 - Responsible for monitoring system status and responding to alarm conditions as Detector Operations Manager.

National Aeronautics and Space Administration, Goddard Space Flight Center

- Research Assistant 2010
 - Analyzed data from Swift Burst Alert Telescope (BAT) to search for hard X-ray emissions around the on-set time of supernovae.
 - Quantified the X-ray counterpart to Fermi-LAT pulsar observations using X-ray emission data from the Chandra and BeppoSax missions.

James Madison University, Physics Department

- Undergraduate Research Assistant 2008 – 2011
 - Designed and maintained table-top experiments to characterize the complex, non-linear behavior of granular systems.
 - Implemented computer vision techniques to quantitatively characterize particle movement in a two dimensional shear flow.
 - Utilized optical polarization techniques to quantify stress networks in granular systems.
 - Performed statistical analysis to characterize relevant parameters in a two dimensional granular shear flow.

EDUCATION

University of Maryland, College Park, Maryland, USA

- Doctor of Philosophy (Ph.D.) in Physics Aug 2011– 2016 (Expected)
 - Thesis: Signal Corrections and Calibrations in the LUX Dark Matter Detector

James Madison University, Harrisonburg, Virginia, USA

- Bachelor of Science (B.S.) in Physics, magna cum laude Aug 2007 – May 2011

SKILLS

Physics	Mathematics	Data Analysis	Statistics
Matlab	Python	C++	MySQL
HTML	CSS	Bash	Git
Machine Learning	Machining		

HONORS

John Mather Nobel Scholar Award Aug 2010

- Awarded for high academic achievement, and contributions to research at NASA's Goddard Space Flight Center. Funded by money from John Mather's Nobel Prize in physics.

Henry W. Leap Scholarship Mar 2010

- Awarded to one student each year for academic excellence and significant research contributions.

Sigma Pi Sigma Inductance Mar 2010

- Accepted into the national physics honors society.

President's List, James Madison University 2009 – 2011

- Awarded for academic excellence (3.9 GPA or higher). Received this honor every semester from Fall 2009 until graduation in Spring 2011.

Dean's List, James Madison University 2008 – 2011

- Awarded for academic excellence (3.5 GPA or higher). Received this honor every semester from Fall 2008 until graduation in Spring 2011.

References and publications available upon request