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Dr. Sinéad Walsh

Education and Professional Career

2017–present **Astrophysicist (Senior Postdoctoral Research Associate)**, *University of Wisconsin - Milwaukee (USA)*.
Managing a team of graduate students to improve data analysis techniques for identifying gravitational-waves signals. Training a machine learning neural network to classify 158 million candidates, improving noise rejection by two orders of magnitude with respect to previous methods.

May–September 2019 **Consultant Software Developer**, *SIMOC*.
Consulting on research, Python code development, and applied physics for SIMOC, a pilot research and outreach platform to simulate habitats on Mars.

February–October 2019 **Consultant**, *Catalyst BioConsulting, Medical College of Wisconsin, Milwaukee (USA)*.
Providing research-based business solutions to Milwaukee start-ups.

2015–2017 **Astrophysicist (Postdoctoral Research Associate)**, *The Max Planck Institute for Gravitational Physics, Hannover (Germany)*.
Leading a search for signal patterns in data using the Einstein@Home distributed computing project. Aggregating billions of candidates, spread across 10,000 frequency bands, to identify outliers and anomalies.

2013–2015 **Astrophysicist (Postdoctoral Research Associate)**, *University of Wisconsin - Milwaukee (USA)*.
Developing, optimizing and automating analysis techniques to identify patterns in data with Einstein@Home.

2008–2012 **Ph.D. Physics**, *Ghent University (Belgium)*.
Developing analysis methods to measure the event rate of one type of particle in data containing trillions of events from the Compact Muon Solenoid (CMS) detector at the Large Hadron Collider, CERN.

Summer 2008 **Research Intern**, *SCK.CEN Nuclear Research Center, Mol (Belgium)*.

Summer 2007 **Undergraduate Researcher**, *Applied Optics Group, NUI Galway (Ireland)*.

2004–2008 **B.Sc.(Hons) Physics and Astronomy. First Class Honours**, *National University of Ireland, Galway (Ireland)*.

Skills

Data Science Optimization | Automation | Simulation | Data Cleaning | Data Wrangling | Anomaly Detection | Hypothesis Testing | Statistics | Machine Learning | Grid Computing | Software Prototyping | Research | Problem Solving

Leadership International Project Management | Project Planning | Team Management

Communication Consulting | Scientific Communication | Scientific Writing | Documentation

Science Particle physics | Gravitational-wave Astrophysics

Programming Python | Mathematica | C | C++ | SQL | R | Perl | LabVIEW | MATLAB | Octave | ROOT | RooFit

Software Linux | OSX | LaTeX | svn | git | HTC