

Bachelor and Master Theses: Light Dark Matter Searches with NEWS-G

AG Prof. Kostas Nikolopoulos
<https://www.physik.uni-hamburg.de/en/iexp/gruppe-nikolopoulos.html>

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Light Dark Matter Searches with NEWS-G @ Uni Hamburg

Dark matter constitutes over five times as much of the universe's mass as the ordinary matter we are made of, yet its nature remains unknown. The NEWS-G Collaboration searches for particle dark matter in the uncharted sub-GeV mass range using the Spherical Proportional Counter, a novel gaseous detector.

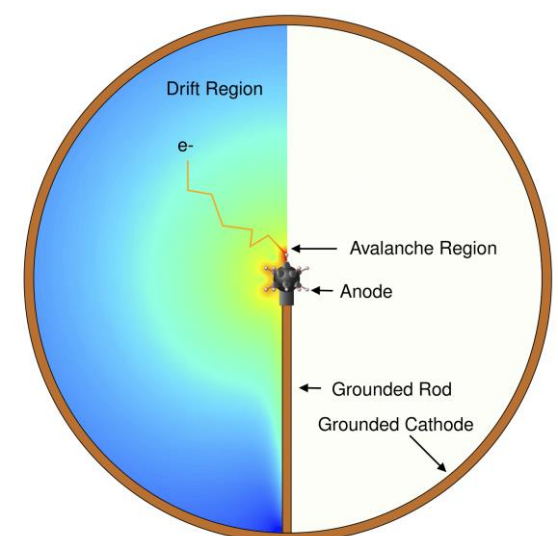
Universität Hamburg plays a leading role in the NEWS-G Collaboration, with Prof. K. Nikolopoulos serving as spokesperson, including:

- Data analysis and reconstruction techniques for direct searches of light dark matter
- Detector instrumentation research and development for current and next generation detectors

We currently collect and analyse data with the SNOGLOBE detector at SNOLAB underground laboratory in Canada. In parallel, we develop the next-generation detector DarkSPHERE, which will boost the experiment's physics potential through advanced instrumentation and extreme radiopurity. A scale model of this detector is being constructed at the Boulby Underground Laboratory, the UK's national deep underground science facility. We offer opportunities for Bachelor and Master theses on all aspects of this effort, from instrumentation development and measurements, to data analysis and reconstruction techniques.

You will learn about direct searches for dark matter, physics of gaseous detectors, simulation techniques, data analysis methods, and event reconstruction with machine learning. You will work in an international collaboration and perform fascinating work for underground laboratories.

Detector principle of operation



NEWS-G at Boulby Mine



For more information, contact us:

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