

ΣΕΜΙΝΑΡΙΑ Τμ. ΦΥΣΙΚΗΣ

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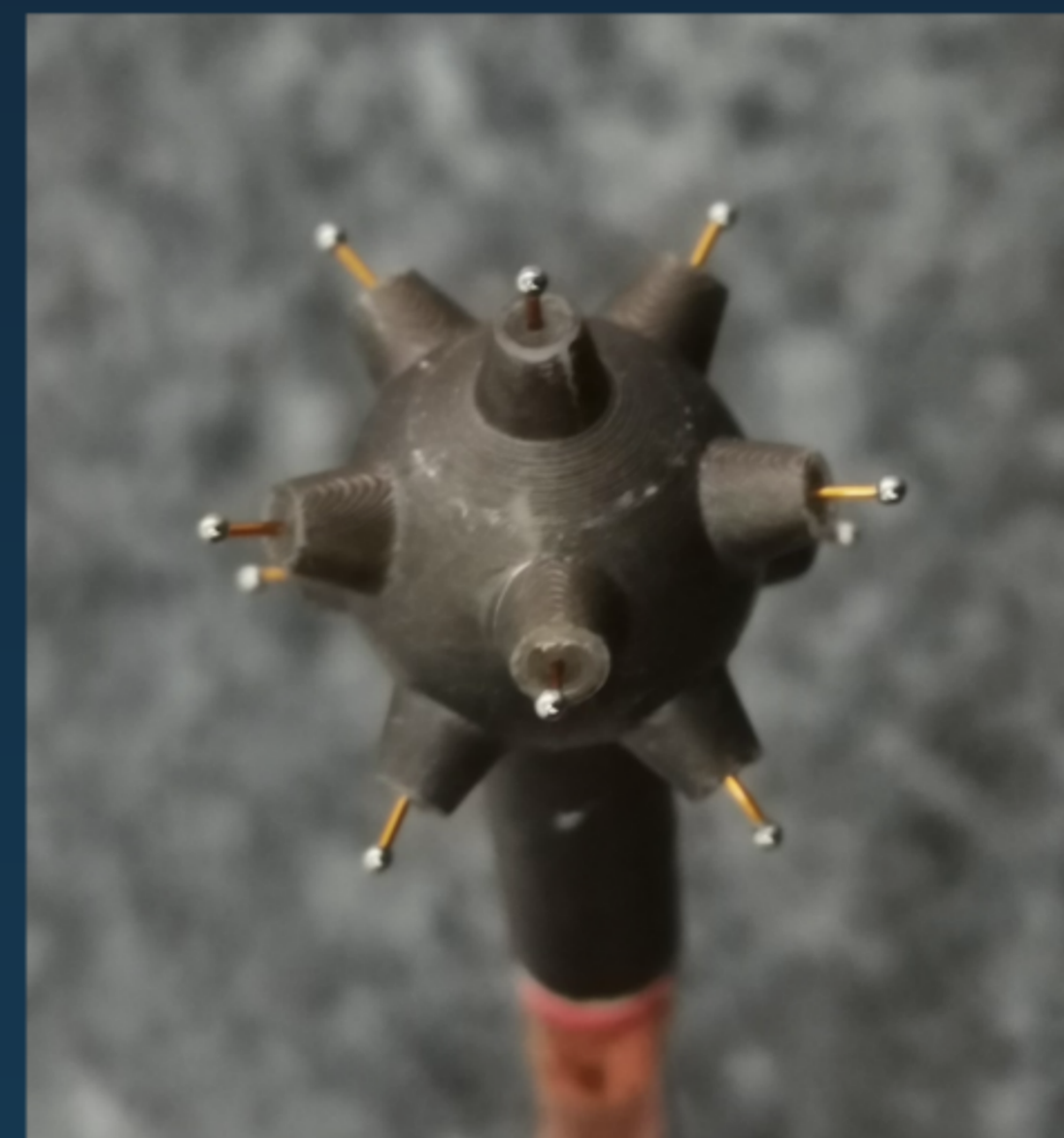


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Where does mass come from? Spherical Proportional Counters and other approaches for light Dark Matter searches



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It is established through astronomical observations and precise measurements that approximately 85% of the matter content of our Universe consists of non-baryonic cold Dark Matter. Despite the decades long, ever more sensitive, searches performed, the particle nature of Dark Matter remains elusive. This experimental scrutiny fell mostly on Dark Matter candidates in the 10 GeV - 1 TeV mass range, in part because these are predicted in models addressing the hierarchy problem. However, more recent considerations have brought to attention lighter candidates with sub-GeV masses. This is an experimentally challenging mass region, which remains largely uncharted. Innovative approaches to explore this parameter space will be discussed, including the searches performed using Spherical Proportional Counters.

Dr. Konstantinos Nikolopoulos is an experimental particle physicist studying the origin of mass through electroweak symmetry breaking and the Higgs sector, as well as searching for the particle nature of dark matter. He received his Ph.D. from the University of Athens (Greece) in 2010, for which he was awarded the Marc Virchaux Prize. He subsequently joined Brookhaven National Laboratory (USA) as a postdoctoral research associate, and in 2012 moved to the University of Birmingham, where he became Professor of Physics in 2018. Since 2023, he has been Professor of Experimental Physics at the University of Hamburg. His work has been recognised with the 2019 Blavatnik UK Award for Young Scientists in Physical Sciences and Engineering and the inaugural 2020 ERC Public Engagement with Research Award (Public Outreach category).

