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The NASDUCK collaboration: using quantum magnetometers to look for ultralight dark matter

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When DM bosons have an ultra-light mass, they can act as a classical, coherent field. In many cases, and specifically in some ALP models, this field has magnetic properties, and it can therefore be measured by quantum magnetometers. The Noble and Alkali Spin Detectors for Ultralight Coherent darK matter (NASDUCK) collaboration, was formed last year in order to measure such DM. Recently, the collaboration released its first results from the "NASDUCK-Floquet" experiment, which looks for DM roughly in the femto to pico eV mass range. The new experiment places the most stringent terrestrial constraints to date on ultra-light axion-like particles coupled to neutrons. The constraints are comparable to those from stellar cooling, providing a complementary probe. In my talk I will discuss the theory behind the NASDUCK-Floquet experiment. I will also discuss future prospects of the NASDUCK collaboration, and some of our planned experiments.

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