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Dark Matter Search with the PICO 60 Bubble Chamber

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Dark matter searches with fluorinated target materials have an excellent sensitivity for spin dependent interactions. Bubble chambers can hold large amounts of fluorine and have an extraordinary ability to suppress gamma backgrounds and reject alpha background. A bubble chamber can also be operated with varying target liquids allowing to test different dark matter couplings.

The PICO 60 detector recently concluded a run with a dark matter search exposure of 1.2 ton-days filled with C_3F_8. We will report the results from this run and present updates on the sensitivity of PICO 60 to low mass dark matter interactions.

The PICO collaboration is currently deploying a new bubble chamber with 40 litres of active volume and reduced background. We will report the progress and sensitivity of this chamber.

With the recent successes of the bubble chamber technique PICO proposes to construct a 500 litre chamber using the same technology. This experiment is expected to be located at SNOLAB, construction could start as early as 2018.

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