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PICO-40, an important step towards a ton-scale spin-dependent dark matter search experiment at SNOLAB

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The PICO collaboration is one of the leaders in the field of dark matter searches. As of today, it has built several bubble chambers of increasing active mass and sensitivity, with PICO-60 being the largest of the series to date, containing 40 L of superheated C_3F_8 . Despite the great success of PICO-60, some important design changes are needed in order to realize the next generation PICO-500 (500 L) experiment. In fact, the presence of dust in combination with the buffer fluid prevent us from scaling the current version. To test these modifications and improvements, an intermediate scale detector PICO-40 (40 L) is under construction. In this presentation, I will discuss some limitations of the PICO-60 technology and explain how to circumvent them with the so-called “right-side up” design of PICO-40. I will present an overview of the various systems and the current status of the detector fabrication, which should lead to the operation of the detector this spring. Finally, future plans for PICO-500 will also be presented.

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