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PICO: searching for dark matter with bubble chambers

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The PICO collaboration uses bubble chambers to search for dark matter, with world-leading sensitivity to spin-dependent (SD) WIMP-proton couplings via direct detection. The bubble chambers are operated in a moderately superheated state, providing excellent rejection of the dominant gamma background, and are located in the deep underground facility SNOLAB in Canada. The PICO-60 detector has set the most stringent limits to date for SD WIMP-proton couplings using C3F8; while the collaboration is currently commissioning PICO-40L, a new detector that will incorporate several design improvements to reduce backgrounds from neutrons and particulate contamination; and is also preparing PICO-500, a ton-scale bubble chamber designed to cover a large range of mass and cross section parameter space, proving a variety of theoretical models. The PICO collaboration has built a well established technology, easily scalable and relatively inexpensive with flexibility to easily exchange targets following a discovery.
The latest results of the PICO programme will be presented in this talk, as well as the current status of backgrounds control and Monte Carlo simulations for PICO-40L and PICO-500.

Secondary track (number)

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