

PICO Bubble Chambers for Dark Matter Searches

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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. The collaboration is currently installing PICO-40L, a new detector that will incorporate several design improvements to reduce backgrounds from neutrons and particulate contamination; and is also preparing PICO-500L, 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 technology, latest results from the PICO-60 detector, recent progress in PICO-40L and future plans towards PICO-500L will be presented in this talk.

Primary author: Dr VÁZQUEZ-JÁUREGUI, Eric (Instituto de Física UNAM)

Co-author: COLLABORATION, PICO

Presenter: Dr VÁZQUEZ-JÁUREGUI, Eric (Instituto de Física UNAM)

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