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Searching for Solar WIMPs with Ten Years of IceCube Data JEFFREY LAZAR, University of Wisconsin-Madison, CARLOS ARGELLES, Harvard University, QINRUI LIU, University of Wisconsin-Madison, ALI KHEIRANDISH, The Pennsylvania State University, ICECUBE NEUTRINO OBSEVATORY COLLABORATION — The existence of dark matter (DM) has been well-established by repeated experiments probing many length scales. Even though DM is expected to make up 85% of the current matter content of the Universe, its nature remains unknown. One broad class of corpuscular DM motivated by Standard Model (SM) extensions is weakly interacting massive particles (WIMPs). WIMPs can generically have a non-zero cross-section with SM nuclei, which allows them to scatter- off nuclei in large celestial bodies such as the Sun, losing energy and becoming gravitationally bound in the process. After repeated scattering, WIMPs can sink to the solar center, leading to an excess of WIMPs there. Furthermore, WIMPs can annihilate to unstable SM particles, which will eventually create stable SM particles. Only neutrinos can escape the dense solar core. Thus, neutrino observatories may look for these neutrinos as evidence of WIMPs. In this talk, I will present the current status of IceCube's solar WIMP search, which covers the range from 10 GeV to 1 TeV

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