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The DARWIN Observatory

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Liquid xenon is an ideal target material to probe Dark Matter and neutrino physics well beyond the sensitivity of ongoing projects. The DARWIN observatory is a proposed detector with a multitude of physics channels spanning particle, astroparticle, and nuclear physics. DARWIN will probe vanilla WIMPs down to the signal from atmospheric neutrinos, and search for light WIMPs, solar axions, axion-light particles and signatures of sterile neutrinos. The detector will be capable of accurately measuring solar pp neutrinos as well as the signal from coherent neutrino-nucleus scattering of solar boron-8 neutrinos. The detector will also be sensitive to neutrinoless double-beta decay of xenon-136 as well as rare nuclear physics processes such as double electron capture.

Author: Prof. LANG, Rafael (Purdue University)

Presenter: Prof. LANG, Rafael (Purdue University)

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