## CPAD 2025 at Penn



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## A Directional Skipper CCD Detector for MeV Scale Dark Matter

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The search for sub-GeV dark matter requires novel experimental design due to the small expected ionization signal and large backgrounds, many of which still need to be modeled or calibrated. One way to unambiguously detect dark matter is to measure the directionality of the incoming particles so that the daily modulation of the rate can be used to confirm a dark matter signal. This can be accomplished by combining anisotropic scintillating crystals, such as trans-Stilbene, as a detector target, with an optically-sensitive Skipper CCD as a readout. I will present progress over the past six months developing the first prototype of this detector, including optical testing of the trans-Stilbene, designing the detector, and initial characterization of the CCD. This work will lead to the deployment of the first prototype later this year.

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