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PIXeY - Liquid Xenon R&D at Yale BLAIR EDWARDS, ETHAN BERNARD, SIDNEY CAHN, NICOLE LARSEN, ALEXEY LYASHENKO, DANIEL MCKINSEY, JAMES NIKKEL, YUNCHANG SHIN, BRIAN TENNYSON, CHRISTOPHER WAHL, Yale University, NICHOLAS DESTEFANO, MOSHE GAI, University of Connecticut — In recent years xenon has risen as a medium for particle detection, exhibiting a number of desirable qualities that make it well-suited for applications such as medical imaging, imaging of nuclear materials, and fundamental physics research. Xenon is a bright scintillator, with a fast ($\sim$45 ns) response time, a large charge yield and high electron mobility. The high density (3 g/mL) and high atomic number (Z = 54) of liquid xenon make it ideal for detecting gamma rays with high efficiency over large energy ranges. PIXeY (Particle Identification in Xenon at Yale) is a compact, liquid-xenon-based TPC that operates in either single or two-phase (liquid/gas) mode and detects both charge and light signals produced by particle interactions within the detector. The initial goal of the experiment is to study xenon physics with implications for the operation and design for future large scale experiments (for dark matter or double beta decay), including energy resolution and event discrimination. This presentation will provide an overview of the experiment and discuss the xenon physics studies planned, the results so far and a brief overview of future plans.

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