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**Neutron Pulse Shape Discrimination in Long Liquid Scintillator Counters** BRADLEY WOOD, JEFF BLACKMON, SAVARNIK DIXIT, LAURA LINHARDT, EDWARD ZGANJAR, Louisiana State University — Efficient and selective neutron detection is important for nuclear physics research and for applied areas like homeland security. Counters based upon some varieties of liquid scintillator have the significant advantage that neutrons can be discriminated based upon pulse shape analysis. Large counters are desired to achieve high efficiency, but the effectiveness of pulse shape discrimination is compromised in some large geometries by light propagation and reflections that distort the signal shape. We are studying signal distortion in long (lengths up to 2 m) counters based upon the EJ301 scintillator. Digital signal processing and waveform analysis are being applied in an effort to improve neutron discrimination despite signal distortion. The approach and preliminary results will be presented.

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