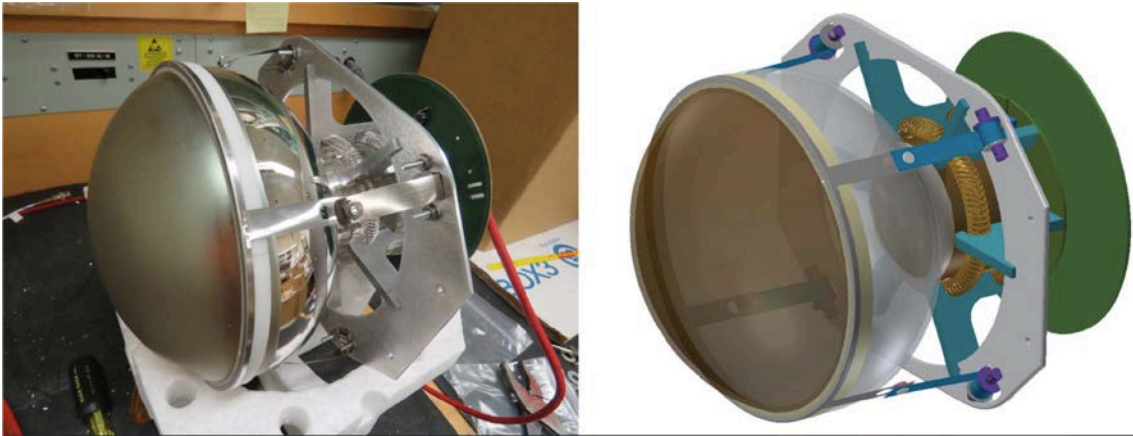


## SBN Progress – October 2018

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### I. SBND PDS

Progress has continued with the construction of the SBND Photon Detection System (PDS). The fabrication of all 160 PMT mounting fixtures is complete, and the PMTs have all been attached to their fixtures, as shown in Figure 1. Also, the 24 mounting boxes have arrived, as shown in Figure 2. In addition, the two 80 channel feed-through plates are completed (see Figure 3) and the CAEN electronics have been installed in the cooling rack (see Figure 4). Finally, we are planning to perform a complete PDS system test this autumn in the CAPTAIN cryostat. The system test will fully test the PMTs, electronics, DAQ, and event reconstruction.



*Figure 1: A photograph and schematic drawing of a PMT in its mounting fixture.*



*Figure 2: A photograph of six of the 24 PDS mounting boxes that have arrived at LANL.*



*Figure 3: A photograph of one of the two 80 channel feed-through plates.*



*Figure 4: The CAEN electronics have been assembled in the cooling rack.*

## II. New MiniBooNE Dark Matter Results

New MiniBooNE light dark matter results (see arXiv:1807.06137) are shown in Figure 4, where the blue curve shows the limit as a function of dark matter mass in a vector portal model. This limit uses both forward scattering electron events, which provide the best limit at lower dark matter masses, and neutral-current scattering events, which provide the best limit at higher masses. The limit is approaching the relic density curve, where the vector portal model would explain all dark matter.

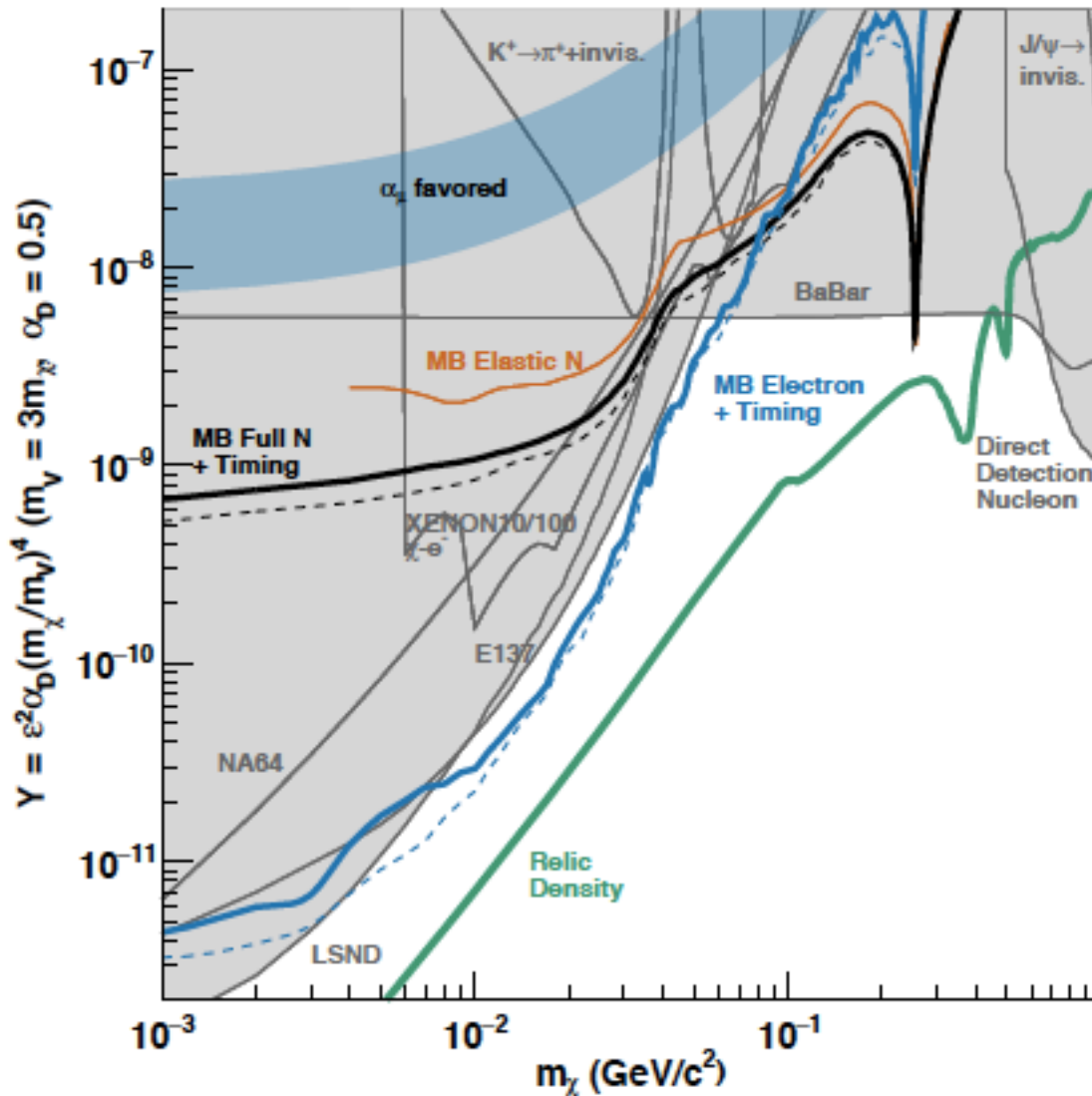


Figure 4: The MiniBooNE limit (blue curve) on light dark matter in a vector portal model. The limit is approaching the relic density curve (green curve).