SBN Progress – July 2017

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I. SBND PDS Feed-through System

Figure 1 shows the latest design of the SBND Photon Detection System (PDS) Feed-through System. As shown in Figure 2, there will be two Feed-through Systems for the 144 PMTs in the PDS. A detail of one of the SHV hermetic feed-throughs is shown in Figure 3.
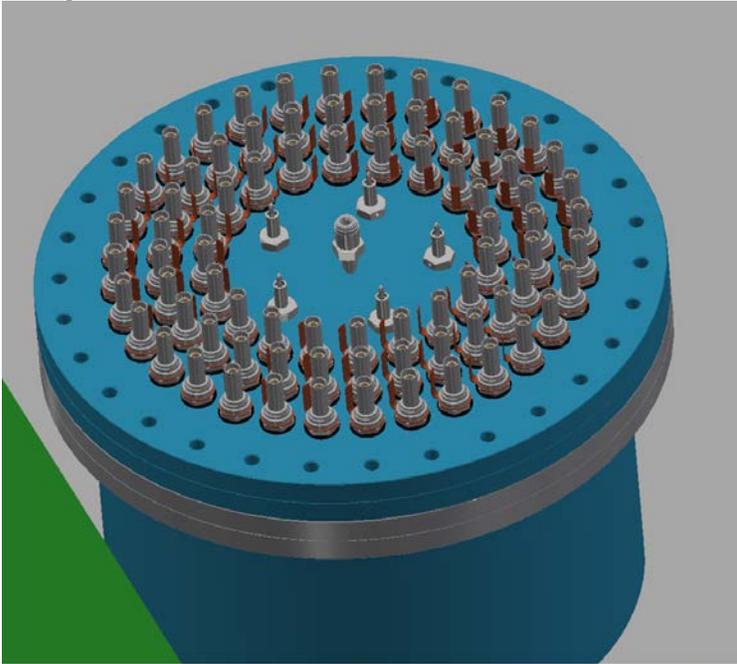

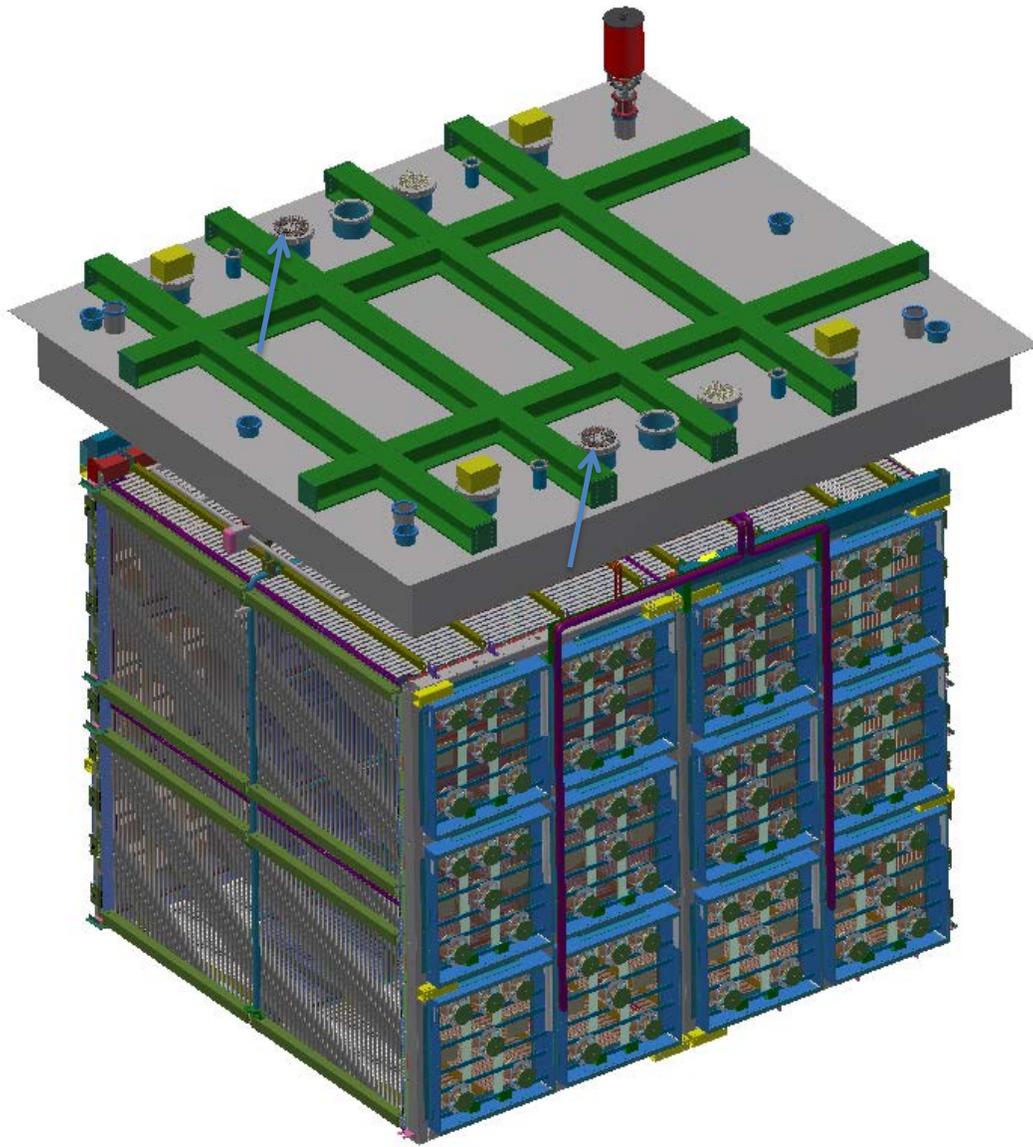*Figure 1: The latest design of the SBND PDS Feed-through System.*

Figure 2: A schematic drawing of the SBND PDS. The two PDS feed-throughs are designated by the blue arrows.
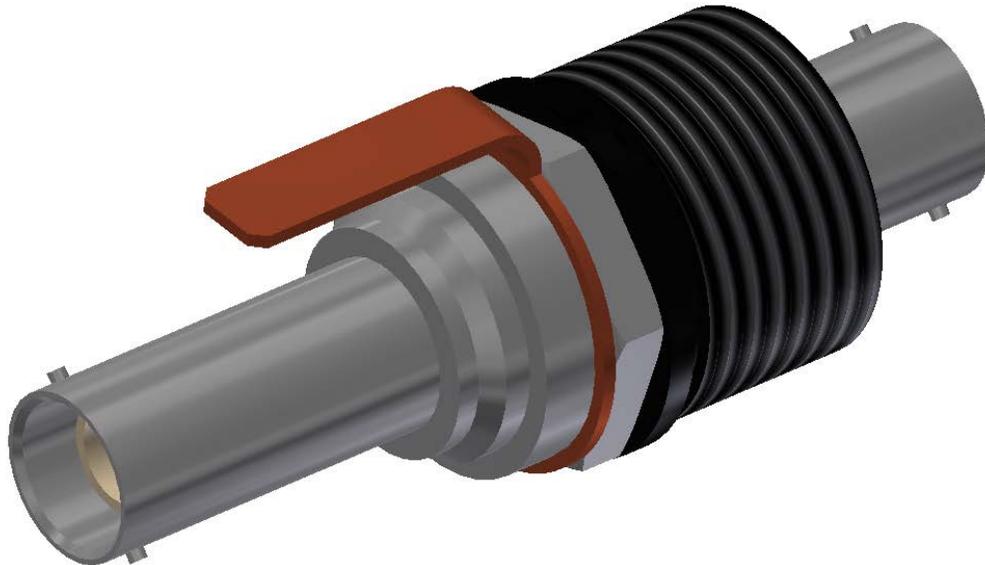
Figure 3: A detail of one of the SHV hermetic feed-throughs for the SBND PDS.

II. SBND PMT Linearity

Figure 4 shows the PDS PMT linearity for two different values of the coupling capacitor. As shown in the figure, the PMTs are fairly linear up to about 100 photoelectrons. The bases for the 144 PMTs are now being constructed.
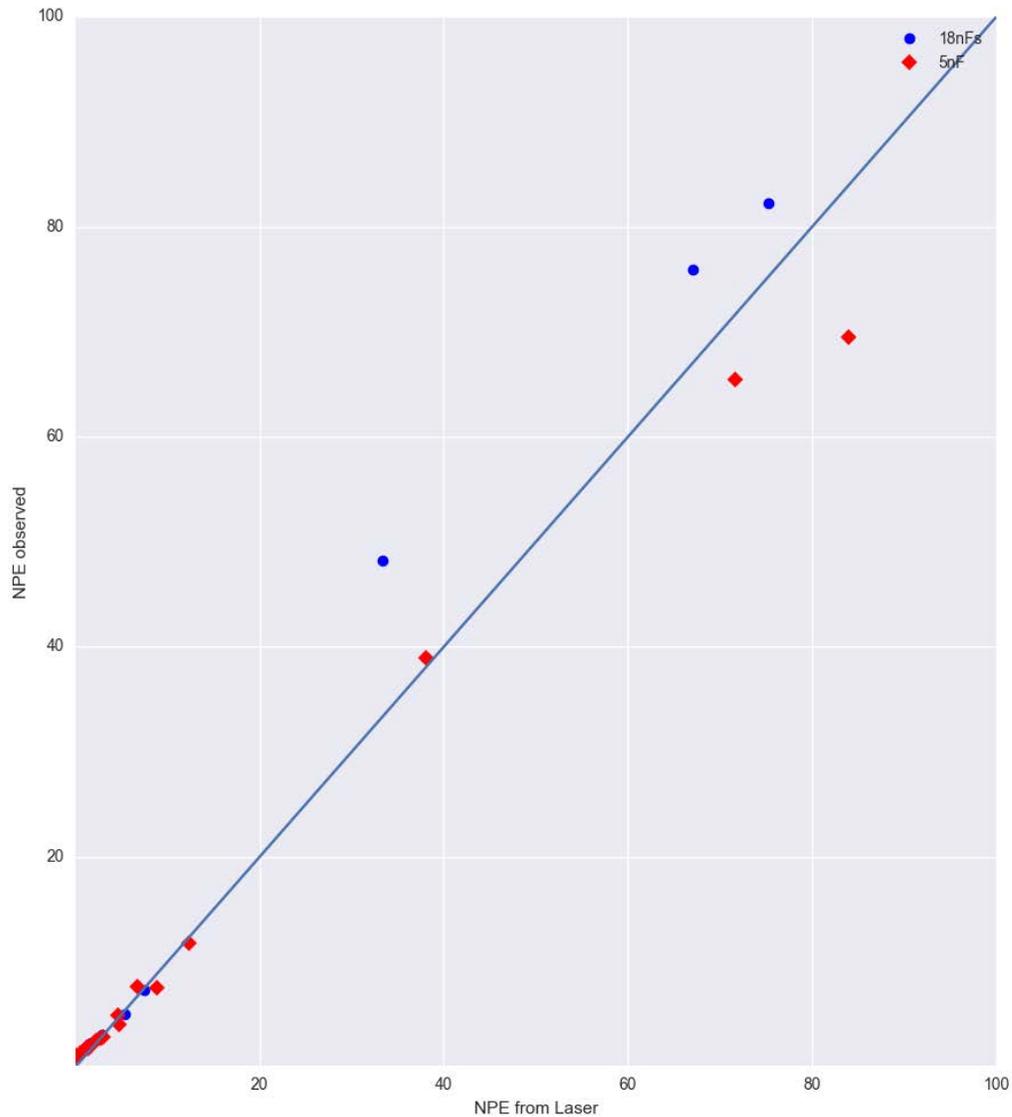
Figure 4: The PDS PMT linearity for two different values of the coupling capacitor. The PMTs are fairly linear up to about 100 photoelectrons.

III. MiniBooNE Beam-Dump Results

MiniBooNE took data in beam-dump mode in 2014 and collected 1.86 E20 POT. This enables MiniBooNE to set improved limits on light dark matter. A paper has been published in PRL (PRL 118, 221803 (2017)). Two other channels are now being analyzed.

IV. MicroBooNE & MiniBooNE Neutrino Data

The current MicroBooNE & MiniBooNE data run ended on July 7. Over the past two years, MicroBooNE has collected 6.1E20 protons on target (POT), while MiniBooNE has increased its neutrino data sample from 6.46E20 POT to 13.3E20 POT. The data are being analyzed and new neutrino oscillation results are expected within a year.