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A novel AmBe neutron source design for future large-scale liquid detector

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The Americium-Beryllium (AmBe) source is well-known for the use of gamma and neutron detection calibration in large-scale liquid detectors. At Brookhaven National Lab, we designed a new type of AmBe source combining with Lutetium–yttrium oxyorthosilicate (LYSO) crystal. By combining them, the single PE calibration for the PMTs in the liquid detector can be done with the intrinsic LYSO crystal activities. Meanwhile, the gamma from the AmBe source can provide us with a tag to look for the neutron signal that is captured in the liquid, either by hydrogen or Gd, afterward. In this talk, this new source design will be shown along with the preliminary test results from this source calibration system.

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