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Development of the novel 3D-projection opaque liquid scintillator calorimeter

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Since the entry to the precision era for the nuclear and high-energy physics communities, excellent particle detection capability is highly demanded for each part of the detection system. A homogeneous EM-Calorimeter could provide excellent energy resolution for electrons and photons in a wide dynamic range allowing rapidity coverage, particle containment and granularity. However, concerns of high cost and radiation hardness in a severe radiation environment are often raised for large (tens of tons) calorimeters planned in future collider experiments such as the Electron-Ion Collider (EIC).
We are developing a scalable 3D-projection calorimeter designed for multiple purposes in the High-Energy Physics and Nuclear Physics community. As a first step, a full 3D-projection readout system has been carried out at the Brookhaven National Lab, paving the road for the future stages developing a liquid-phase 3D-projection calorimeter with fine granularity, tunable high light yield, fast timing, excellent scalability, and cost efficiency. In this talk, the current development status will be presented for such a calorimeter.

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