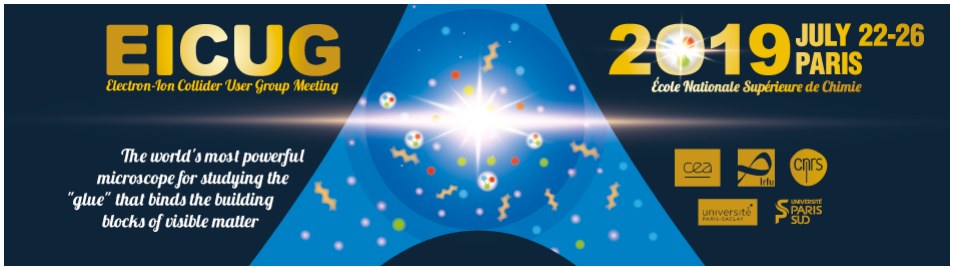

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New materials for EIC calorimeters

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The prospective future Electron-Ion Collider (EIC) would offer a unique opportunity to understand the role of gluons in strongly interacting nuclear matter. An essential requirement of the EIC calorimeters is to provide adequate energy resolution, which translates into momentum resolution and reconstruction, over a wide kinematic range, as well as particle identification in the forward and backward directions. This sets the EIC calorimeters apart from many others. Progress is being made to get reliable PbWO4 crystals that would be compatible with EIC requirements at small angles in the forward and backward regions. At larger angles, where resolution requirements are less stringent, glass scintillators provide an attractive and cost effective option. Some of the most promising materials investigated are cerium doped hafnate glasses and doped and undoped silicate glasses and nanocomposite scintillators. All of these have various shortcomings that include, lack of uniformity and, macro defects, as well as limitations in radiation length, density, radiation resistance, and timing. One of the most recent efforts is DSB:Ce, which is a cerium-doped glass. Small samples of this material have been shown to be in many aspects competitive with PbWO4. However, the issue of macro defects, which can become increasing acute on scale-up remain. A future EIC glass-based calorimeter can benefit from many aspects of this very promising R&D, but also presents its own unique set of challenges. In this talk we will report on the status of the EIC homogeneous crystal/glass-based calorimeter project R&D project and plans for the future.

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