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WITHDRAWN - Picosecond Timing Layers for Future Calorimeters: Updates from the Askaryan Calorimeter Experiment (ACE)

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We report on results from the Askaryan Calorimeter Experiment (ACE) which uses the coherent microwave Cherenkov emission from high energy particle showers in dielectric-loaded waveguides as calorimetric timing layers. Above ACE's energy threshold, a single 5 cm thick (1.4 X_0) layer of ACE waveguides would provide ˜1 ps timing, 3D spatial constraints on the scale of ˜300 μm to 5 mm, and an additional energy measurement, making ACE a true 5D detector. When embedded inside another calorimeter technology, ACE layers could provide a powerful measurement for particle-flow algorithms as well as unique vertexing capabilities to significantly reduce pileup. Due to thermal noise limits, ACE elements have a relatively high energy threshold so they are currently limited to future high CoM colliders like the FCC-hh. We report on new simulations from deploying ACE layers in the barrel and forward calorimeters at future colliders and discuss ongoing research to further develop the ACE concept.

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No, this is an entirely new submission.

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