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ArgonCube: A Novel Design for Modular Liquid Argon Time Projection Chambers

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ArgonCube is a novel design for Liquid Argon Time Projection Chambers (LAr TPCs), segmenting the total detector volume into a number of electrically and optically isolated TPCs sharing a common cryostat.
For the charge-readout, a pixelated anode plane is employed, providing unambiguous 3D event reconstruction.
In order to maximise the active TPC volume a new technology is used for field-shaping, replacing the classical field-cage with a continuous resistive plane.
Large dielectric light-collection tiles within the TPC allow for an efficient detection of prompt scintillation light.
ArgonCube has found application in the near-detector of the Deep Underground Neutrino Experiment, DUNE, and is also proposed for one of the four far-detectors.

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