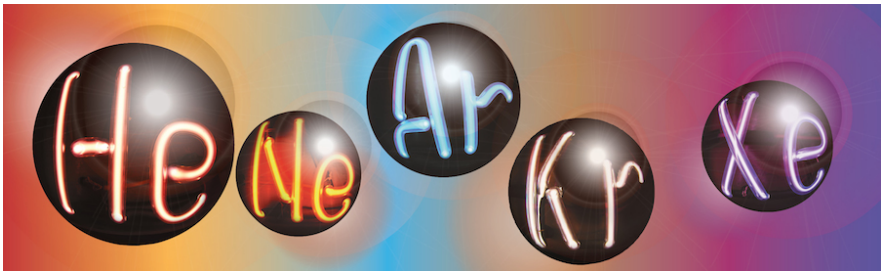


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# A Pixelated Charge Readout for Liquid Argon Time Projection Chambers

*Saturday, 23 September 2017 10:00 (15 minutes)*

Liquid argon time projection chambers (LArTPCs) are ideally suited to perform long baseline neutrino experiments aiming to measure CP violation in the lepton sector, and determine the ordering of the three neutrino mass eigenstates.
LArTPCs have used projective wire readouts for charge detection since their conception in 1977.
However, wire readouts are notoriously fragile and therefore a limiting factor in the design of any large mass detectors.
Furthermore, a wire readout also introduces intrinsic ambiguities in event reconstruction.
Within the ArgonCube concept—the liquid argon component of the DUNE near detector—we are developing a pixelated charge readout for LArTPCs.
Pixelated charge readout systems represent the single largest advancement in the sensitivity of LArTPCs.
They are mechanically robust and provide direct 3D readout, serving to minimise reconstruction ambiguities, enabling more advanced triggers, further reducing event pile-up and improving background rejection.
This talk will present first results from a pixelated LArTPC prototype built and operated in Bern.

## Summary

First results of a pixelated charge readout for a LArTPC are presented.
This novel readout aims to solve the limitations projective wire readouts impose on the design of future LArTPCs.

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