

# Achievements at the MeV Scale in the MicroBooNE LArTPC

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Though liquid argon time projection chambers (LArTPCs) excel at reconstructing neutrino interactions at  $\sim 100$ s of MeV in energy, their physics reach can be enhanced by extending reconstruction to much lower energies. MicroBooNE has demonstrated reconstruction capabilities for energy depositions at the  $\sim$ MeV and sub-MeV scale, which manifest as isolated “blips” spanning only a few readout channels on the TPC wire planes. Using data from special R&D runs where MicroBooNE’s LAr was doped with radon, new software tools were used to identify the beta and alpha decay products of progeny isotopes bismuth-214 and polonium-214. Measuring the rate of these correlated decays under different filtration configurations revealed that liquid-phase electronegative filters effectively mitigate radon contamination. Further studies using novel background subtraction techniques produced calorimetric energy spectra of these decay products, showcasing sensitivity down to  $\sim 100$  keV in electron-equivalent energy for charge-based readout. These tools were then applied to standard data-taking conditions to set a radiopurity limit for ambient bismuth-214, the first of its kind for a large single-phase liquid-filtered LArTPC.

## Poster prize

No

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**Classifica Sessioni:** Poster session and reception 2

**Classificazione della track:** New technologies for neutrino physics