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# Novel Methodology for Low Energy IBD-like Antineutrinos Detection and Potential

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The novel methodology outlined in the just-released "Probing Earth's Missing Potassium using the Unique Antimatter Signature of Geoneutrinos"(arXiv:2308.04154) shows a novel possible way to address one of the most extreme measurements neutrinos may be able to accomplish: the observation of 40K geoneutrinos —so far proved impossible. The most challenging condition of this measurement is to find an IBD-like interaction with an energy threshold well below the typical 1.8MeV IBD on protons since the energy spectrum of 40K has a Q-value of ~1.3MeV. Our study finds, for the first time, that there seems to be only a single isotope in the Universe capable of addressing this elusive requirement as well as others necessary to ensure feasible detection. One of the most critical is that detection requires a detector capable of identifying the signature of antimatter; i.e. single-e+ ID is a must. This rules out most of today's technology except the LiquidO (see dedicated talk), which may be able to address the challenges upon loading. Beyond geoneutrino observations, there are possible applications that open with lower-energy anti-neutrinos detection using the same principle. The new detection methodology for the lowest energy anti-neutrinos will be highlighted in my talk, including a preliminary discussion of applications.

## Abstract title

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