Contribution ID: **53** Type: **Poster**

A fast, easily multiplexable, high Z cryogenic scintillator for γ tagging or veto in very low noise experiments

Wednesday, 22 March 2023 16:00 (3 minutes)

By combining a BGO scintillator crystal, and a Kinetic Inductance Detector light readout, we can take advantage of the BGO's high density, high Z, high radiopurity, high light-yield at cryogenic temperatures and relatively fast timing, and combine it with a KID's fast response time, ease of readout, natural multiplexing and sub-0.1keV resolution, to obtain a fast sensor that is well suited to read out γs from the full 4π solid angle around the detector, with a low threshold and no dead layer. The combination of these factors makes this detector well suited for applications such as γ tagging and γ+μ veto, which rely on proximity to the detector, large solid angle coverage and a short readout time.

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Session Classification: Poster advertisment