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Optimum Filter Analysis in CRESST-III

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The Cryogenic Rare Event Search with Superconducting Thermometers (CRESST) experiment aims for the direct detection of dark matter (DM). In the current low-mass DM search, a low energy threshold and a high resolution at low energies are crucial for exploring the parameter space. In the most recent CRESST Phase III, alongside hardware changes, the energy threshold could be improved using a different analysis approach based on the optimum filter method, which reduces the noise contribution to the signal, resulting in an optimized signal-to-noise ratio. This allows the experiment to be one of the leading ones in probing sub-GeV DM masses. In this contribution the optimum filter method has been tested for performance and improvement using additional digital filtering and calibration methods.

Submitted on behalf of a Collaboration?

Yes

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