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Optimum Filter Analysis in CRESST

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The Cryogenic Rare Event Search with Superconducting Thermometers (CRESST) experiment aims for the direct detection of dark matter. A low energy threshold and a high resolution at low energies are critical for exploring parameter space in the current low-mass DM search. Together with hardware modifications, a new strategy based on the optimum filter method, which optimises the signal-to-noise ratio, is used in the most recent CRESST analysis to improve the energy threshold. This allows the experiment to be among the leading ones in probing sub-GeV DM masses. In this work, additional digital filtering and calibration techniques have been tested for performance and improvement of the optimal filter method.

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