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Using BeEST data for limits on neutrino wavepacket sizes and other ideas

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The precision of the BeEST measurement can be used to study wavepacket sizes in 7-Be electron capture decays. Predictions for wavepacket sizes vary widely based on the scale of localizing interactions and are largely unconstrained by data. By using Heisenberg's uncertainty principle and conservation laws, the BeEST measurement places the first experimental limit on the size of decay products in electron capture decays and the first direct measurement of wavepacket sizes in a radioactive decay neutrino source. It may be possible to improve on this novel technique to determine the scale of localizing interactions in weak nuclear decays. BeEST data may also be used for other interesting secondary analyses such as half-life measurements.

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