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Going big for Phase III of the Project 8 neutrino mass experiment

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Project 8 is a next-generation experiment aiming to directly measure the neutrino mass using the tritium endpoint method with a targeted sensitivity of 40 meV. Having established a new measuring technique, Cyclotron Radiation Emission Spectroscopy (CRES), the next development phase will demonstrate CRES on a large source volume, culminating in a pilot-scale CRES experiment with atomic tritium. A promising option is a mode-filtered, cylindrical resonant cavity in which cyclotron radiation from magnetically trapped beta electrons couples only to the lowest eigenmode, maximizing effective volume and minimizing signal complexity. I will show

recent progress in the experimental design, including a small scale cavity CRES proof-of-concept apparatus to demonstrate CRES in cavities and its scalability to large volumes.

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Submitted on behalf of a Collaboration?

Yes

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