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Radiofrequency instruments to search for new particles and measure neutrino mass

GRAY RYBKA, University of Washington

The smallness of the neutrino mass scale and renewed interest in sub-eV particles to explain dark matter and dark energy suggest that physics beyond the standard model may be found by looking at energies much lower than those traditionally associated with nuclear physics. Fortuitously, recent advances in microwave and radiofrequency electronics from fields such as radio astronomy and quantum computing offer the ability to access these energy scales with unprecedented sensitivity. I will discuss the application of these advances to nuclear physics, highlighting experiments using microwave technology to probe the neutrino mass scale and experiments using of quantum radiofrequency electronics to search for sub-eV particles such as axions.