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Supernova neutrino detection with RES-NOVA

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Neutrinos are key particles in many astrophysical sources. They influence the stellar evolution, drive the formation of heavy elements, and are also messengers of the most energetic and unexplored events in Universe, like Supernovae (SNe).
Neutrinos are key particles in many astrophysical sources. They influence the stellar evolution, drive the formation of heavy elements, and are also messengers of the most energetic and unexplored events in Universe, like Supernovae (SNe).
A timely and high-resolution detection of the neutrino signal produced by the next Galactic or extra-Galactic SN will provide the only empirical evidence of the dynamics and interaction processes intervening during a SN. The RES-NOVA experiment will hunt for neutrinos from SNe via CEvNS using an array of archaeological Pb-based cryogenic detectors. RES-NOVA will be as sensitive as super-size SN neutrino observatories while running a detector with a total active volume of only $(60\ \mathrm{cm})^3$. RES-NOVA will be sensitive to SN bursts from the entire Milky Way Galaxy with $>3\sigma$ statistical significance. During this workshop, the performance of the first small-scale proof of principle will be presented as well as sensitivity projections.

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