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The PTOLEMY dark matter and relic neutrino detection project (12'+3')

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The existence of relic neutrinos from the big bang is a well established fact in any cosmological model. Since they are expected to currently have an energy of a few milielectronvolts, their detection is a huge technological challenge. The PTOLEMY detector is a proposal to directly detect the cosmic neutrino background by looking at the very rare electrons emitted in the inverse beta decay of Tritium nuclei induced by relic neutrinos. An intermediate phase of the experiment aims also at using graphene for direct detection of light (\sim MeV) dark matter particles, with unique directional sensitivity. We present the PTOLEMY concept and describe the first activities of the Swedish groups participating in this proof-of-concept experiment.

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