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The PTOLEMY-G experiment for light dark matter direct detection

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One of the pillars of the standard cosmological model is the undisputed existence of a relic cosmic neutrino background (CNB) that still need to be probed. Recently a new window to the direct detection of CNB has been opened with the proposal of the PTOLEMY experiment, with a prototype detector ready to be tested at an Underground site, likely the Gran Sasso Laboratory in Italy. Given the exceptional sensitivity of the detector to low energy electrons, a novel method based 2D target surfaces, fabricated from graphene, for light (MeV-scale) dark matter direct detection is proposed as a first stage to form a basis for the future large-scale relic neutrino detector. The PTOLEMY experimental program will be outlined with special focus on the light dark matter direct detection program.

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