Planck Mass Rotons as Cold Dark Matter and Quintessence*

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According to the Planck aether hypothesis, the vacuum of space is a superfluid made up of Planck mass particles, with the particles of the standard model explained as quasiparticle – excitations of this superfluid. Astrophysical data suggests that \( \approx 70\% \) of the vacuum energy, called quintessence, is a negative pressure medium, with \( \approx 26\% \) cold dark matter and the remaining \( \approx 4\% \) baryonic matter and radiation. This division in parts is about the same as for rotons in superfluid helium, in terms of the Debye energy with \( \approx 70\% \) energy gap and \( \approx 25\% \) kinetic energy. Having the structure of small vortices, the rotons act like a caviton fluid with a negative pressure. Replacing the Debye energy with the Planck energy, it is conjectured that cold dark matter and quintessence are Planck mass rotons with an energy below the Planck energy.

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