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Neutrino Magnetic Moments Meet Precision N_{eff} Measurements

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In the early universe, Dirac neutrino magnetic moments due to their chirality-flipping nature could lead to thermal production of right-handed neutrinos, which would make a significant contribution to the effective neutrino number, N_{eff} . In this talk, I will show that the neutrino magnetic moments above $2.7 \times 10^{-12} \mu_B$ have been excluded by current CMB and BBN measurements of N_{eff} . This limit is stronger than the latest bounds from XENONnT and LUX-ZEPLIN experiments and comparable with those from stellar cooling considerations.

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