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Current constraints on cosmological scenarios with very low reheating temperatures

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If reheating occurs at sufficiently low temperatures (below 20 MeV), neutrinos—assuming they are populated only through weak interactions—do not have enough time to reach thermal equilibrium before decoupling. We present an updated analysis of cosmological models with very low reheating scenarios, including a more precise computation of neutrino distribution functions, leveraging the latest datasets from cosmological surveys. At the 95% confidence level, we establish a lower bound on the reheating temperature of $T_{\text{RH}} > 5.96$ MeV, representing the most stringent constraint to date.

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