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Cosmological constant problem and Hubble tension in scale-dependent cosmology

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In this work, a cosmological model based on the scale-dependent scenario of gravity is presented. We argue that the discrepancy between the Planck mass scale and the observed value of the cosmological constant can be largely attenuated if those quantities are understood as a result of effective, and thus scale-dependent, couplings. In the approach where the scale-dependence appears as a correction to the classical Λ CDM evolution, the potential to address the tensions between early and late time measurements of H_0 is studied. Our results are compared to the renormalization group flow obtained within the asymptotic safety program, which reveals a stunning agreement. The work is based on JCAP 01 (2020) 021, JCAP 06 (2021) 019, and arXiv:2205.05592.

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