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Revisiting the Cosmological Constant Problem within Quantum Cosmology VESSELIN GUEORGUIEV[1], IAPS and and Ronin Institute for Independent Scholarship, Montclair, NJ, USA, ANDRE MAEDER, Geneva Observatory at the University of Geneva, Switzerland — The Cosmological Constant (CC) problem is discussed within the multiverse context. It is assumed that each member of the ensemble of universes has a characteristic scale a that can be used as integration variable. An averaged characteristic scale $\bar{a}$ of the ensemble is estimated by using only members that satisfy the Einstein Field Equations (EFEs). The $\bar{a}$ is compatible with the Planck length when considering an ensemble of solutions to the EFEs. The multiverse ensemble is split in Planck-seed universes with vacuum energy density of order one and a-derivable universes. For a-derivable universe with a characteristic scale of the order of the observed Universe $a \approx 8 \times 10^{60}$, one has $\Lambda = \tilde{\Lambda}/a^2$ is in the range 10^{-121}–10^{-122}, which is close in magnitude to the observed value 10^{-123}. We point out that the smallness of Λ can be viewed to be natural if its value is associated with the entropy of the Universe. This approach to the CC problem reconciles the Planck-scale huge vacuum energy–density predicted by QFT considerations, as valid for Planck-seed universes, with the observed small value of the CC as relevant to an a-derivable universe as observed. [Universe 2020,**6**,108; doi:10.3390/universe6080108].

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