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Natural infrared cutoff: new origin for the late time cosmic acceleration

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Motivated by the ultraviolet deformation of the Hamiltonian systems in loop quantum cosmology, we investigate an infrared modification of the spatially flat FRW geometry. While the energy density and Hubble parameter get maximized in loop quantum cosmology, these quantities take the minimum values in our setup. Considering only a massless scalar field in matter dominated era in this setup naturally leads to a dynamical dark energy model and the dark component originates purely from infrared effects. The dynamical system analysis of the model also shows the viability of this model so that the universe starts from a matter dominated era, smoothly enters into a quintessence regime and then transits to a phantom era followed by a big rip singularity.

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