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Loop quantum cosmology: confronting the hybrid quantization approach with observations JAVIER OLMEDO, Louisiana State University; Pennsylvania State University, DANIEL MARTIN DE BLAS, Pontificia Universidad Catolica de Chile — In loop quantum cosmology there are several approaches for the confrontation of the theory with observations. Here, we focus on the hybrid quantization approach. We provide an exhaustive analysis including scalar and tensor perturbations on effective (quantum-mechanically corrected) homogeneous and isotropic cosmologies coupled to a massive scalar field. We compute the primordial power spectrum of the perturbations at the end of inflation for a set of initial vacuum states defined at the deep quantum regime of the cosmological model. We then analyze the tensor-to-scalar ratio and the consistency relation between this quantity and the spectral index of the tensor power spectrum. Eventually, we compute the temperature-temperature, electric-electric, temperature-electric and magnetic-magnetic correlation functions predicted by this approach and compare them with present observations.

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