

Some aspects of the phenomenology of loop quantum gravity for cosmology and black holes

Flora Moulin

*Laboratoire de Physique Subatomique et de Cosmologie, Université Grenoble-Alpes, CNRS/IN2P3
53, avenue des Martyrs, 38026 Grenoble cedex, France*

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I will first focus on scalar cosmological perturbations in loop quantum cosmology. I will show the influence of initial conditions and of different inflation potentials, both in the dressed metric and in the deformed algebra approaches. In the ultraviolet, the different choices converge toward a reliable result, while the infrared part of the spectrum highly depends on the choices made. I will then turn to black holes in different models. In the « bouncing » approach, I will show that taking into account the stochastic nature of the lifetime might change the energy of the signal and fit better the data. Then, I will present the cross sections for quantum fields in the background of a polymeric black hole. Finally, I will present how cumulative quantum effects outside the horizon can influence the quasinormal modes and possibly lead to experimental consequences.