

Loop Quantum Gravity: Basics and Recent Advances

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References

References where students can find detailed derivations. Far from being an exhaustive list but sufficient for these lectures. These references are pointers in that they will serve to connect the lectures to the literature. Their bibliography will lead to other useful papers.

- For Loop Quantum Gravity in general, there are reviews that are up to date till 2017 or so in the book *Loop Quantum Gravity: The first 30 years*, edited by AA and Pullin; See chapters by Giesel, Laddha+Varadarajan and Bianchi for foundational material. You will find references to original papers there.
- For LQC, See the Chapter by Agullo and Singh, and for black holes the Chapter by Barbero and Singh in the “30 Years volume.” But these are not up to date.
- These Chapters are also available in the arXiv under the names of Chapter authors.

References (contd)

For LQC, more recent useful papers I used in my talks are are:

- Agullo, Kranas and Sreenath, Large scale anomalies in the CMB and non-Gaussianity in bouncing cosmologies, arXiv:2006.09605
- Agullo, Olmedo and Sreenath, Predictions for the CMB from an anisotropic quantum bounce Phys. Rev. Lett. 124, 251301 (2020)
- AA, Gupt, Jeong and Sreenath, Alleviating the Tension in the Cosmic Microwave Background using Planck-Scale Physics, Phys. Rev. Lett. 125, 051302 (2020) .
- AA and Gupt, Quantum Gravity in the Sky: Interplay between fundamental theory and observations, Class. Quant. Grav. 34, 014002 (2017), (44pp)
- AA and Gupt, Initial conditions for cosmological perturbations, Class. Quant. Grav. 34, 035004 (2017) (23 pp)
- Assanioussi, Dapor, Liegener and Pawłowski, Emergent de Sitter epoch of the quantum Cosmos
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- Dapor, Liegener and Pawłowski, Challenges in recovering a consistent cosmology from the effective dynamics of loop quantum gravity, Phys. Rev. D 100, 106016 (2019).
- Alesci, Power spectrum of primordial perturbations for an emergent universe in quantum reduced loop gravity, arXiv:1811.04327
- Li, Singh and Wang, Primordial power spectrum from the dressed metric approach in loop cosmologies, Phys. Rev. D 101, 086004 (2020);
- Genericness of pre-inflationary dynamics and probability of the desired slow-roll inflation in modified loop quantum cosmologies, Phys. Rev. D 100, 063513 (2019).