

Inflationary helical magnetic fields with a sawtooth coupling

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The origin of large-scale magnetic fields in the Universe is one of the long-standing problems in cosmology. An intriguing possibility is that they are remnants of primordial fields that originated during inflation as the amplification of quantum vector perturbations.

We discuss the generation of helical magnetic fields by considering a model free from strong coupling or large back-reaction. Conformal invariance is broken only during inflation by coupling the electromagnetic sector to a time-dependent function with a sharp feature, thus preventing magnetic field amplitude from decaying.

Scale-invariant quadratic gravity is a suitable framework to test the model, providing a natural physical interpretation. We show that fully helical magnetic fields are generated with values in agreement with the lower bounds on fields in the Intergalactic Medium derived from blazar observations. This model holds even at large/intermediate energy scales of inflation, contrary to what has been found in previous works.

Disclaimer: The whole Trento academic community is invited to participate. However, since this space is dedicated to PhD students, we would like to maintain an informal and welcoming environment

General information:

The seminar will be held at ECT*, Villa Tambosi, Strada delle Tabarelle 286, Villazzano. We are going to have a coffee break!

To reach Villa Tambosi: take bus number 13 from Povo (one leaves around 11) or bus number 6 from the city center. The bus stops is in front of the Villa.

In order to organize the coffee break we kindly ask you to confirm your presence through the google form that you can find scanning the following QR code:



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