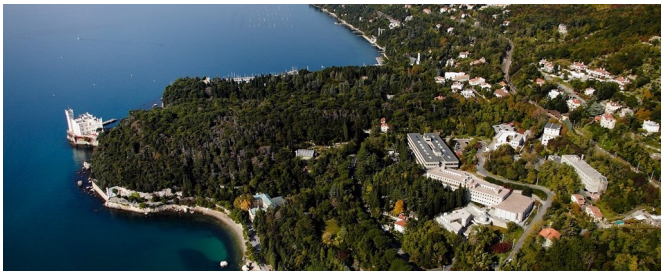

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Parity violating gravitational waves at the end of inflation

Friday 1 September 2023 22:10 (5 minutes)

Inflaton-vector interactions of the type $\phi F\tilde{F}$ have provided interesting phenomenology to tackle some of current problems in cosmology, namely the vectors could constitute the dark matter component. It could also lead to possible signatures imprinted in a gravitational wave spectrum. Through this coupling, a rolling inflaton induces an exponential production of the transverse polarizations of the vector field, having a maximum at the end of inflation when the inflaton field velocity is at its maximum. These gauge particles, already parity asymmetric, will source the tensor components of the metric perturbations, leading to the production of parity violating gravitational waves. In this work we examine the vector particle production in the weak coupling regime, integrating the gauge mode amplitudes spectrum during the entirety of its production and amplification epochs, until the onset of radiation domination. Finally, we calculate the gravitational wave spectrum combining the vector mode analytical solution, the WKB expansion, valid only during the amplification until horizon crossing, and the numerical solution obtained at the beginning of radiation domination when the modes cease to grow.

Presenter: TORRES MANSO, António

Session Classification: Posters of friday (ignore time)