

## 12th Iberian Gravitational Waves Meeting



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# Parity violating gravitational waves at the end of inflation

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Vector particle-inflaton 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. Moreover, 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 with an attempt to mimic its backreaction effects on the inflation evolution. Furthermore, we fully integrate the gauge particle amplitudes spectrum during this production epoch, studying the behavior until  $\epsilon_H = 2$ , at the onset of reheating. Finally, we calculate the gravitational wave spectrum solely relying on the vector mode WKB expansion in its regime of validity.

## Which topic best fits your talk?

Cosmological Sources of GW

**Primary authors:** MANSO, António (Universidad Granada); Dr BASTERO GIL, Mar (Universidad Granada)

**Presenter:** MANSO, António (Universidad Granada)