

Probing New Physics with Gravitational Waves

Saturday 29 April 2023 14:45 (15 minutes)

The thermal plasma in the early universe produced a guaranteed stochastic gravitational wave (GW) background, which peaks today in the microwave regime and was dubbed the cosmic gravitational microwave background (CGMB). We show that the CGMB spectrum encodes fundamental information about particle physics and gravity at ultra high energies. In particular, one can determine from the CGMB spectrum the maximum temperature of the universe and the effective degrees of freedom at the maximum temperature. Quantum gravity effects arise in the CGMB spectrum as corrections to the leading order result. At the end of the talk I discuss how we could detect the CGMB in the future.

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Session Classification: Talks