

Charting new particle physics with primordial GWs

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Particle physics beyond the Standard Model can generate non-standard expansion histories which leave signatures in primordial stochastic backgrounds of gravitational waves (GW).

The detection of GW from cosmic strings in the next decades would tell about the presence of an early matter-dominated era induced by a heavy unstable relic, about the presence of an early vacuum-dominated era induced by a supercooled first-order phase transition, or about the presence of a kination-dominated era induced by spinning axion dynamics. The latter case is particularly interesting since it generates a smoking-gun GW peak which enhances the detectability of primordial inflation and local/global cosmic strings.

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