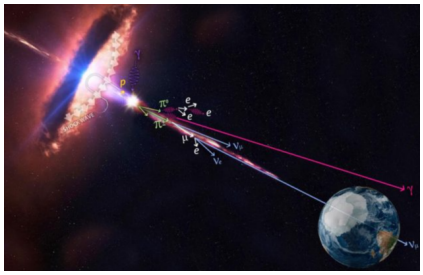

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Tensor Perturbations and Primordial Gravitational Waves in the Brane-Antibrane Inflation Model

We study the production of gravitational radiation during the inflationary era. We leverage the fact that tensor perturbations correspond to two propagating degrees of freedom, known as graviton polarizations. Unlike electromagnetic radiation, which reaches transparency at the decoupling scale, the Universe becomes transparent to gravitational radiation at energy scales just below the Planck scale. This transparency allows us to probe the early universe through graviton spectra computation. We detail our calculations of the graviton spectra, and use it to examine the behavior of gravitational waves during inflation. We study the Brane-Antibrane inflation model and derive the characteristics of primordial gravitational waves. We present its role in the early universe conceptualized as a brane and factorized as $M_4 \times CY_6$, where M_4 is four-dimensional Minkowski space and CY_6 is a six-dimensional Calabi-Yau manifold.

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