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Gravitational waves from curvaton

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We investigate the gravitational wave background induced by the first order scalar perturbations in the curvaton models. We consider the quadratic and axion-like curvaton potential which can generate the blue-tilted power spectrum of curvature perturbations on small scales and derive the maximal amount of gravitational wave background today. We find the power spectrum of the induced gravitational wave background has a characteristic peak at the frequency corresponding to the scale reentering the horizon at the curvaton decay, in the case where the curvaton does not dominate the energy density of the Universe. We also find the enhancement of the amount of the gravitational waves in the case where the curvaton dominates the energy density of the Universe. Such induced gravitational waves would be detectable by the future space-based gravitational wave detectors or pulsar timing observations.

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