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## **Gravity mediated Preheating**

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In this work we propose a mechanism of natural preheating of our universe induced by the inflaton field dependent effective mass term for the gravitational wave. For any single field inflationary model, the inflaton must go through the oscillatory phase after the end of inflation. As has recently been shown, if the gravitational fluctuation has inflaton dependent mass term, there will be a resonant amplification of the amplitude of the gravitational wave during the oscillatory phase of inflaton though parametric resonance. Because of this large enhancement of the amplitude of the gravitational wave, we show that universe can be naturally pre-heated through a minimally coupled matter field with gravity. Therefore, during the pre-heating phase, there is no need to introduce any arbitrary coupling between the matter field and the inflaton .

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