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Gravitational waves from neutrino mass generating phase transitions

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Some particle physics models with an additional $U(1)$ gauge interaction are interesting because those address the origin of neutrino masses. We show that, in a wide class of models, such an extra $U(1)$ gauge symmetry breaking in the early universe can be first-order phase transition and hence generate a detectable amplitude of stochastic gravitational wave radiation in future experiments. We also discuss parameter dependence and a possible UV completion.

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