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Leptogenesis, dark matter and gravitational waves from discrete symmetry breaking

We analyse a model that connects the neutrino sector and the dark sector of the universe via a mediator Φ , stabilised by a discrete Z_4 symmetry that breaks to a remnant Z_2 upon Φ acquiring a non-zero vacuum expectation value ($v\phi$). The model accounts for the observed baryon asymmetry of the universe via additional contributions to the canonical Type-I leptogenesis. The Z_4 symmetry breaking scale ($v\phi$) in the model not only establishes a connection between the neutrino sector and the dark sector, but could also lead to gravitational wave signals that are within the reach of current and future experimental sensitivities.

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