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Origin of matter and gravitational wave

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We exist today thanks to the asymmetry between matter and anti-matter. Its origin, however, has been one of the major mysteries in cosmology and particle physics. Arguably the leading theory called leptogenesis is that the asymmetry is generated by the decay of heavy neutrinos at the temperature above 10^9 GeV. I review this theory and point out that the gravitational wave will be an important test. If time permits, I will also discuss a different origin of the asymmetry which is also tied to the origin of dark matter, again with a gravitational wave signature.

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