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## Bounds on Right Handed Neutrino Parameters from Observable Leptogenesis

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We revisit the generation of a matter-antimatter asymmetry in the minimal extension of the Standard Model with two singlet heavy neutral leptons (HNL) that can explain neutrino masses. We derive an accurate analytical approximation to the solution of the complete set of kinetic equations, which exposes the non-trivial parameter dependencies in the form of parameterization-independent CP-invariants. The analytical approximation reveals various washout regimes that are relevant in different regions of parameter space, exposes the relevance of helicity-breaking corrections in the interaction rates, and clarifies the correlations of baryogenesis with other observables. In particular, requiring that the correct baryon asymmetry is reproduced, we derive robust upper or lower bounds on the HNL mixings depending on their masses, and constrain their flavour structure, as well as the CP-violating phases of the PMNS mixing matrix, and the amplitude of neutrinoless double-beta decay. We also find certain correlations between low and high scale CP phases. All these findings are confronted with numerical scans of parameter space with very good agreement. The methods developed in this work can help in exploring more complex scenarios.

### In-person or Virtual?

Virtual

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