Mirror Dirac Leptogenesis

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We consider an interesting scenario, based on the existence of a mirror world, in which light Dirac neutrinos are generated from a seesaw mechanism and leptogenesis occurs at high scale without violating lepton number. Since lepton number is conserved, this model predicts no neutrinoless double beta decay. After leptogenesis, the conservation law of the theory implies the visible baryon-minus-lepton asymmetry to be equal to the mirror baryon-minus-lepton asymmetry. The final baryon and mirror baryon asymmetries, however, will be related by an order one coefficient, which depends on the details of the model. If dark matter consists of mirror baryons, this can naturally explain the proximity of baryon and dark matter energy densities.Extending previous work, we derive the full set of Boltzmann equations. This allows us to study the effects induced by Z2 symmetry breaking terms and by lepton flavor. These effects can amount to a few orders of magnitude compared to Z2 symmetric and unflavored scenario.