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P4.089 Emissivity of neutrinos in supernova in the pair-annihilation process beyond the standard model

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We calculate the emissivity due to neutrino-pair production in $\text{e}^{+}\text{e}^{-}$ annihilation in the context of a left-right symmetric model, 331 model, little Higgs model and $\text{U}(1)_{\beta-L}$ model in a way that can be used in supernova calculations. We also present some simple estimates which show that such process can act as an efficient energy loss mechanism in the shocked supernova core. We find that the emissivity is dependent on the parameters of the models in the allowed range for these parameters.