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Probing the Sun for BSM Physics using RHESSI

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The nuclear processes within the sun could lead to the production of Beyond the Standard Model (BSM) particles of MeV scale. If these particles are long-lived, they could escape from the Sun and decay into observable particles en route to the Earth.

We use data available from the RHESSI Spectrometer to explore scenarios involving these solar long-lived particles. In particular, we study heavy neutral leptons that couple to neutrinos either through a dipole transition moment or additional elements in the PMNS matrix. We also consider the signal from a heavy axion produced from pp-chain nuclear processes.

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