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Constraining the star formation history with Fermi-LAT observations of the gamma-ray opacity of the universe

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The star formation history (SFH) of the Universe is of fundamental importance to cosmology, not only to galactic formation itself but also for ongoing efforts to determine cosmological parameters and matter content of the Universe. Measurements of the extragalactic background light (EBL) as a function of redshift can constrain models of the SFH, including the initial mass function (IMF) and dust extinction. The gamma-ray spectra of AGN allow us to study the extragalactic background light (EBL) through γ-γ absorption of high-energy photons. In this work, we will use six generic parameter constellations leading to the EBL predictions and compare our results with EBL predictions calculated from observational data. The optical depth for γ-rays owing to electron-positron pair production will be determined for each model and compared to measurements obtained from data.

Apply to be
 considered for a student
   award (Yes / No)?

yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

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