

Abstract Submitted
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The GRB Afterglow Modeling Project: Extinction of Extragalactic Point Sources¹ ADAM TROTTER, DANIEL REICHART, University of North Carolina, Chapel Hill — The Afterglow Modeling Project (AMP) will determine, in a statistically self-consistent way, parameters that describe the time- and frequency-dependent emission and absorption of every gamma-ray burst (GRB) afterglow observed since the first detection in 1997. The result will be an ever-growing catalog of GRB afterglow models that can itself be analyzed to better describe the range of and relationships among the physical properties of GRBs and their environments. We present the model for GRB afterglow extinction. Approximately 40 parameters describe line-of-sight extinction due to: dust, neutral Hydrogen and molecular Hydrogen in the GRB host galaxy; neutral Hydrogen in the intergalactic medium (the Lyman-alpha forest); and dust in our own Galaxy. This very large parameter space is significantly reduced by priors, which we determined by analyzing previously published extinction measurements of stars in our Galaxy, and flux deficits due to Lyman-alpha absorption in the spectra of quasars at redshifts in the range $1 < z < 5$ (which includes the Gunn-Peterson trough). The AMP project aside, these parameters and priors can be used to model extinction towards any extragalactic point source, including supernovae.

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