

Radiation-mediated shocks in gamma-ray bursts

The prompt emission in gamma-ray bursts (GRBs) has been a subject of debate for half a century. Photospheric radiation emitted when the jet transitions from the optically thick to the optically thin regime is a promising candidate. To account for the observations, subphotospheric dissipation should occur before the photons decouple from the plasma. Due to the high radiation pressure, shocks below the photosphere are not collisionless but so called radiation-mediated shocks (RMSs), and the distinction is crucial for the resulting spectrum. In this talk, I present the first-ever fit of a prompt GRB spectrum with an RMS model. I also show that RMS spectra are in many ways similar to the observations, as they consist of a broad, soft power law across the sub-MeV-band with an additional break in X-rays. Finally, I present preliminary results regarding the predicted time-resolved signal.

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