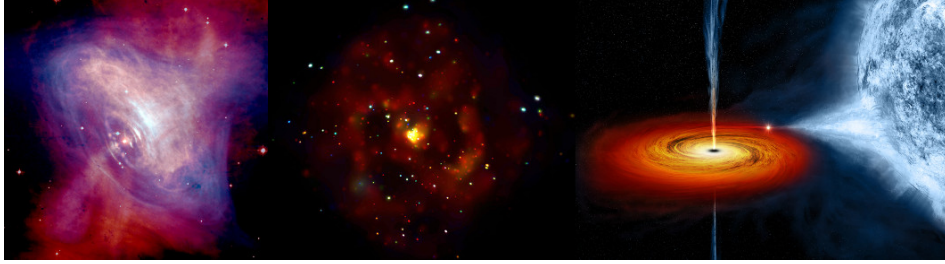


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## Interpretation of GRB spectrum as an evolving Fireball

*Tuesday, April 4, 2023 5:20 PM (10 minutes)*

The time-averaged spectrum of Gamma-Ray Burst (GRB) is often well fitted by an empirical smooth broken power-law function term as the Band model. However, the physical interpretation of this Band function is still being debated. Two competitive models are the synchrotron emission from a non-thermal particle distribution accelerated at a shock front (synchrotron shock model) or a relativistically expanding fireball with a predominant thermal spectrum. Successful explanation of many GRBs using a multi-temperature black body spectrum support the latter while significant detection of polarised emission from the GRB favours the synchrotron shock model. We perform a detailed study of the evolving fireball model with its temperature evolving as a function of its radius. The numerical code developed under this scenario is coupled with X Spec as a local model and used to fit the time-averaged spectrum of GRB 221206B. The main fit parameters are the photospheric temperature and radius, the Lorentz factor of the expansion, and the index describing the temperature evolution. The best-fit parameters obtained are critically analysed to validate the fireball model.

### Presentation Type

Oral

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