

Research project for PhD student

Research Specialisation: Astrophysics, Cosmology, GRB, Data Analysis Techniques

Title: Fermi Gamma-ray Space Telescope modeling of Short Gamma-Ray Bursts

Abstract:

Gamma-ray burst is one of the most powerful astronomical events emitting a large amount of energy in gamma-ray photons within a short period of time and is related to the binary merger of compact objects. This can be produced by the accretion disk around the inner engine but the nature of the central engine and the composition of the jet are still unanswered questions. Fermi gamma-ray space telescope is a NASA satellite, surveys the sky and detects gamma rays from a variety of sources, including gamma-ray bursts. By detecting gamma-ray bursts researchers can know about the physics and astrophysics of these power sources, such as source environment, emission mechanism, and cosmology of a short gamma-ray burst. In this project, a student will use specialized science tools to analyze gamma-ray data from Fermi and interpret results using spectral models of gamma-ray bursts. Besides, the project will consist of modeling the synchrotron and synchrotron self-Compton emission in a multi wavelengths and multi messengers approach from optical to high-energy emission.

Requirements:

The student should be familiar with or willing to learn computer software and programming language. A background in Astrophysical object data analysis will be a plus.

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