

6/10/96

Dear K.S. :

Y.C. Lin of Stanford just sent me the following email message this afternoon telling me the possibility of getting travel support (also attached) for attending the "21st Century Chinese Astronomy Conference" in Hongkong this coming August. I wasn't planning to attend the conference before due to two constraints: (1) JPL allows only one foreign conference per year, and I had already applied for attending the 2nd INTEGRAL workshop "The Transparent Universe" which will be held at St. Malo, France on September 16-20, and (2) Money problem. However, if I do attend, there are four subjects which I would like to share with the Chinese Astronomy community:

### 1. JPL BATSE EARTH OCCULTATION SOURCE CATALOG

#### Abstract

The JPL Enhanced BATSE Earth Occultation Package (EBOP) developed under the Compton Gamma-Ray Observatory Guest Investigation Program monitors the temporal and spectral behavior of the 25 keV - 1.8 MeV emission of a large number of cosmic sources. Daily count rates for 65 sources in 16 energy channels, covering the first three phases (~1000 days) of the mission, have been delivered to the COSSC at GSFC and the PI team at MSFC, making possible a wide range of investigations by the community. An interface to the spectral analysis package XSPEC is also provided to convert EBOP count rates to physical units. We present **here the** first EBOP Source Catalog consisting of lightcurves and spectra for sources monitored during Phases 1-3 of the CGRO mission.

Paper: an Oral talk for introducing the Catalog plus a Poster paper to show some of the results would be useful

### (2) GAMMA-RAY SPECTRA & VARIABILITY OF Cygnus X-1 OBSERVED BY BATSE

We present gamma-ray spectra and variability of black-hole candidate Cygnus X-1 observed by BATSE during the first three phases of the CGRO mission. We show that the standard spectrum (g2) of Cygnus X-1 consists of two components, a Comptonized spectrum below 300 keV, with a persistent high-energy tail extending from ~300 keV to ~2 MeV. The source went through a complex g-ray transition sequence between August, 1993 and May 1994 when the 45-140 keV flux first decreased steadily to roughly one-fourth of its normal intensity over a period of ~140 days. The flux remained low for about 40 days before returning swiftly (~20 days) to the initial level. During the transition, the corresponding spectrum evolved from the two-component spectrum for g2 to a power-law with photon index of -2.6, and then returned essentially to the original g2 spectrum. We interpret the observed temporal and spectral variability in terms of a two-layer system, consisting of a high-energy core (equivalent electron temperature of ~250 keV) near the event horizon of the black hole embedded inside of a ~50 keV corona.

3. "Close Encounter with the Sun"- Report of the Minimum Solar Mission Science Definition Team - This is a study which I chaired for NASA in 1995 for a "Discovery" - class mission to go (~4Rs) to the Sun (~4Rs). The primary objectives of the mission are to make in-situ and remote sensing measurements of the near-Sun environment, the only star in the universe, accessible to humankind. Some specific objectives of the mission are to understand the origin and acceleration mechanism of the solar wind. If you find this subject interesting, I could give a brief description of some of the highlights of the mission and concept.