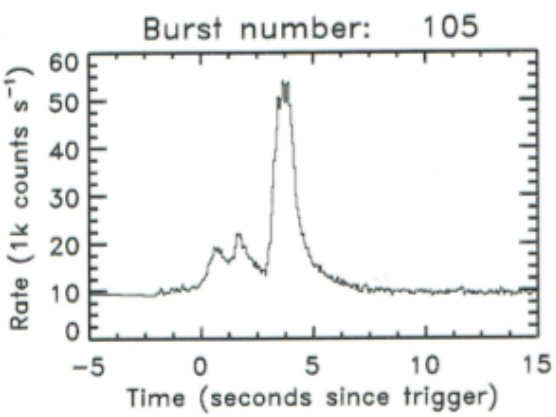
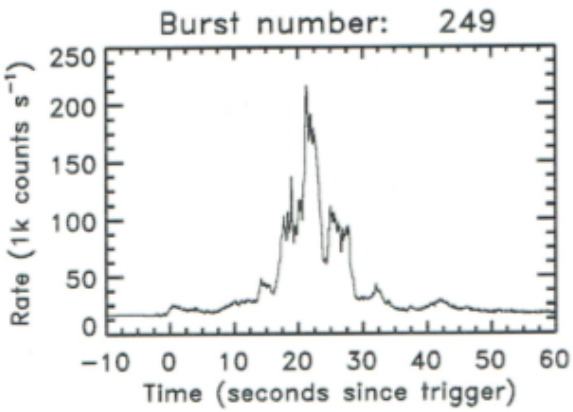
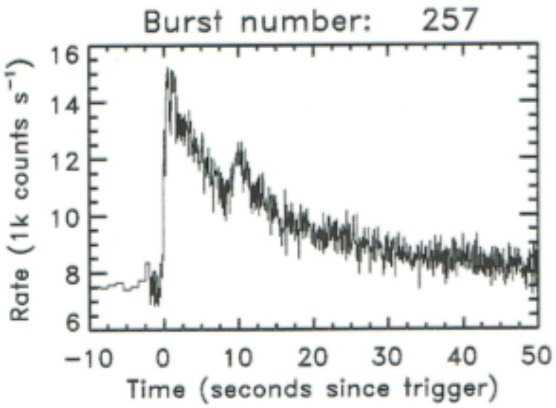

NASA

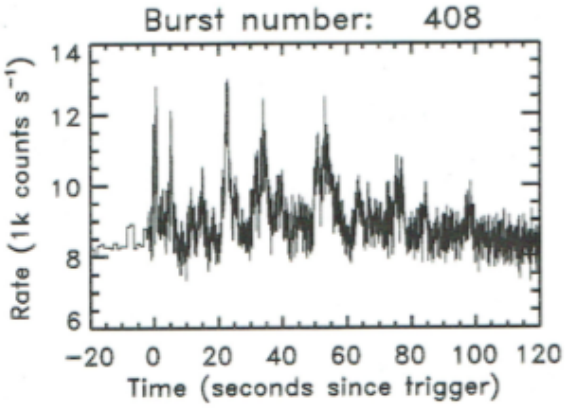
BATSE Gamma-Ray Bursts

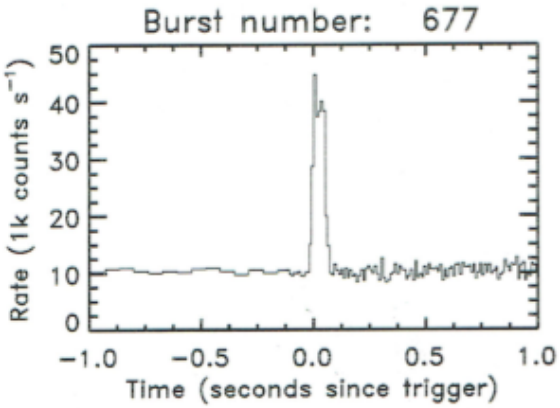
"progress through failure"

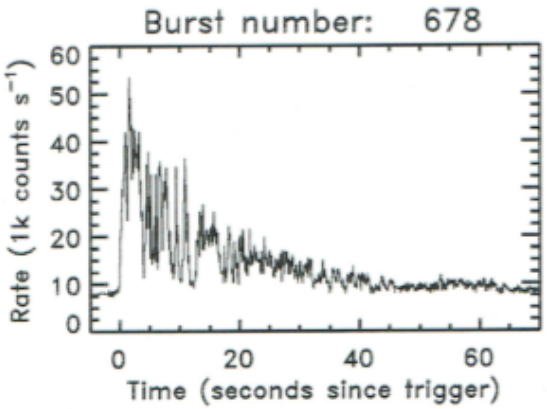

Burst number: 105
Rate (1k counts s^{-1})
Time (seconds since trigger)

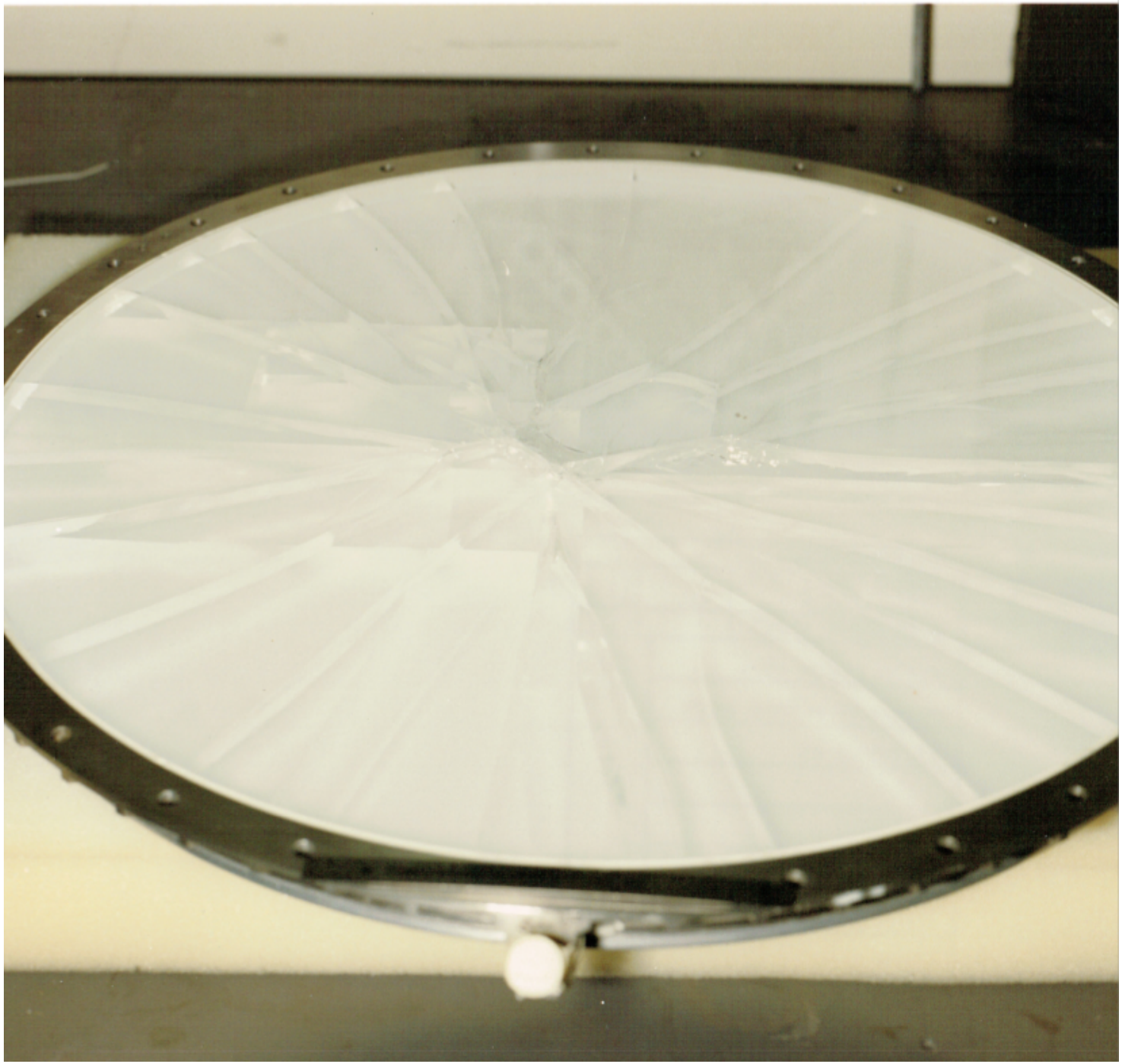

Burst number: 249
Rate (1k counts s^{-1})
Time (seconds since trigger)


Burst number: 257
Rate (1k counts s^{-1})
Time (seconds since trigger)


Burst number: 408
Rate (1k counts s^{-1})
Time (seconds since trigger)


Burst number: 677
Rate (1k counts s^{-1})
Time (seconds since trigger)


Burst number: 678
Rate (1k counts s^{-1})
Time (seconds since trigger)



Tape Recorder Failure

Real time data

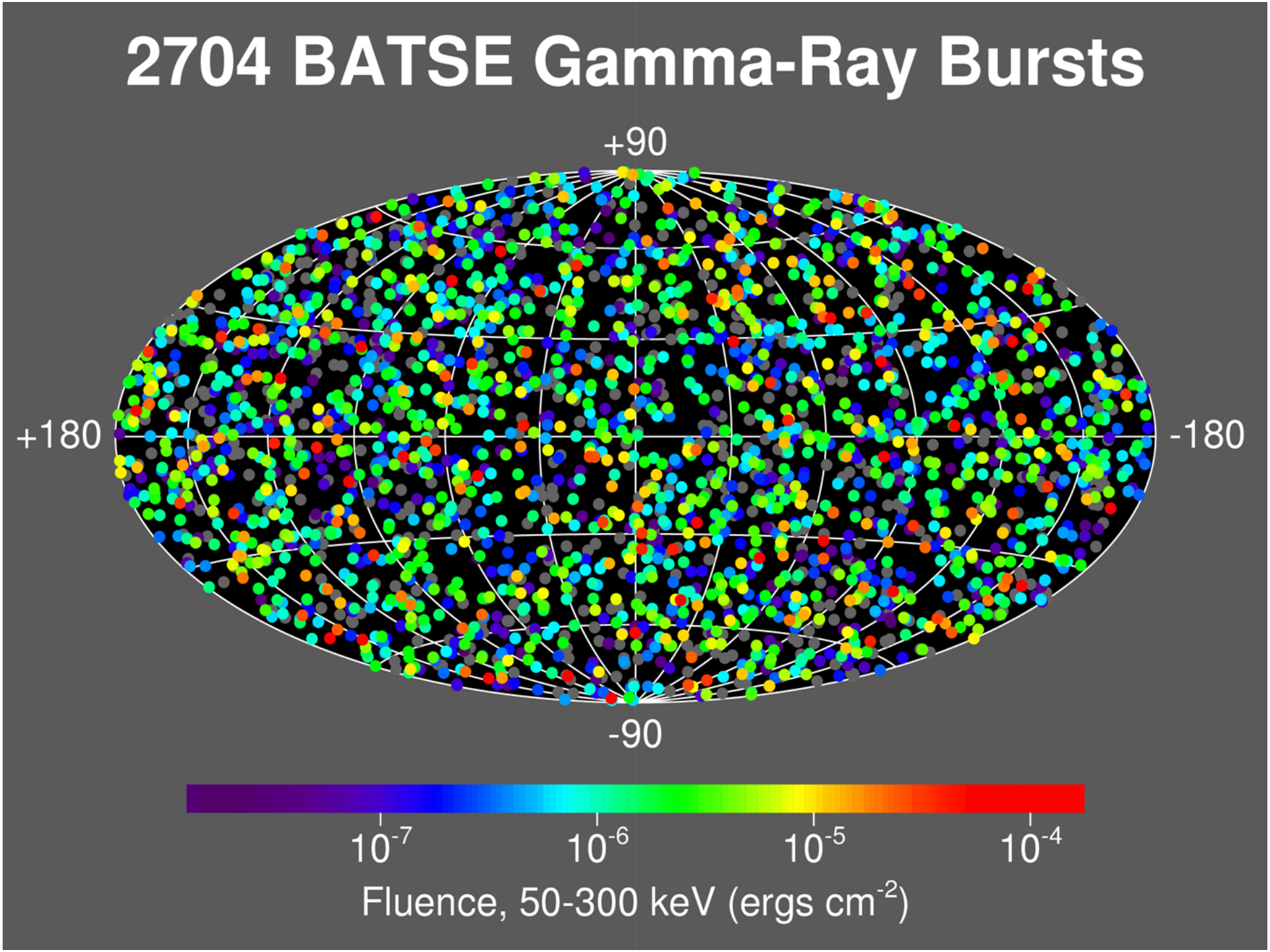
Bacodine

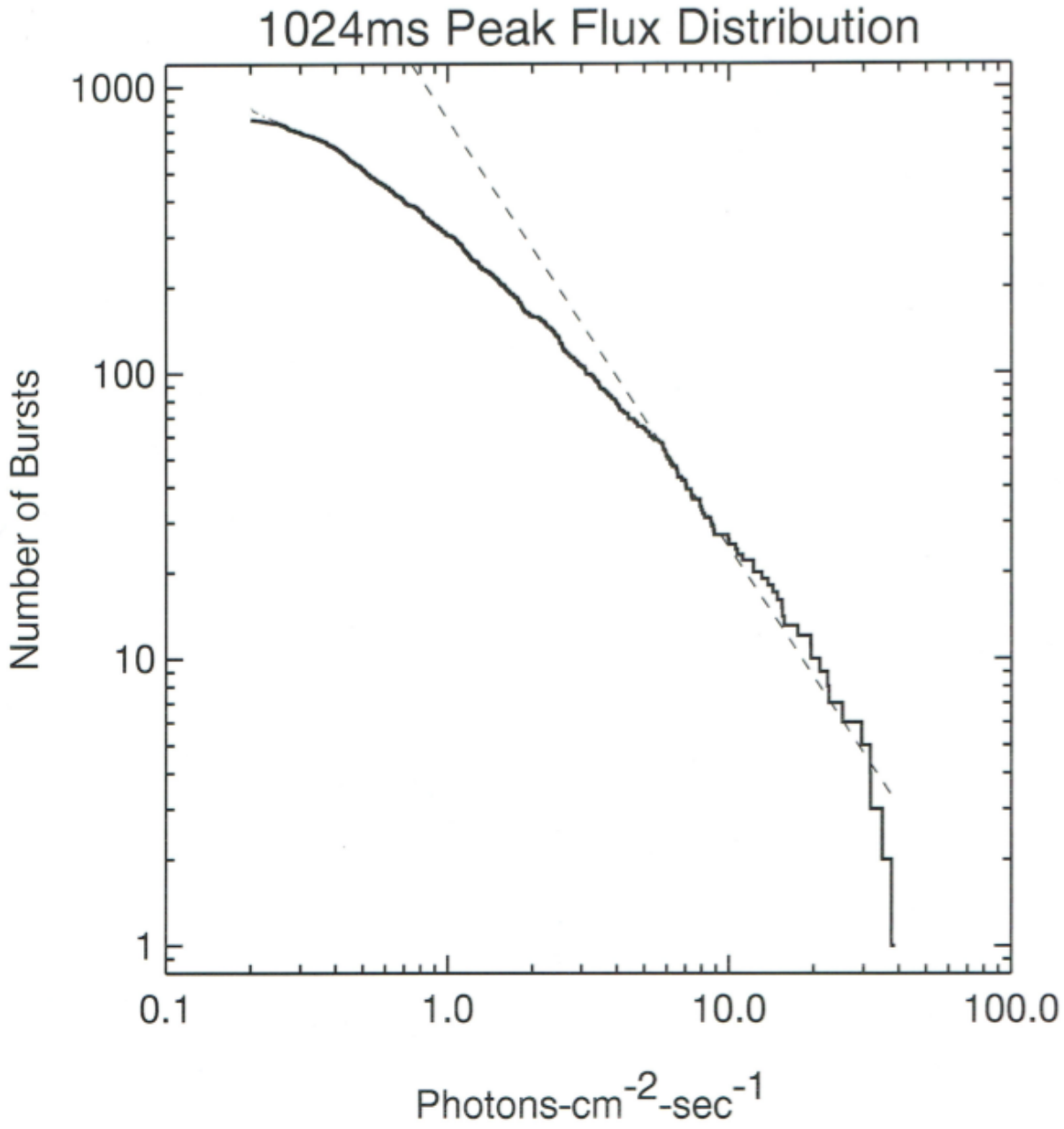
GCN

From the BATSE proposal:

"…an accurate distribution curve could possibly reveal such effects as spiral arm structure and a central galactic concentration of burst sources."

"…a map of the numerous bursts would be extremely revealing, showing perhaps the general galactic distribution of the burst sources."


2704 BATSE Gamma-Ray Bursts
+90
+180
-180
-90
10^{-7}
10^{-6}
10^{-5}
10^{-4}
Fluence, 50-300 keV (ergs cm^{-2})


1024ms Peak Flux Distribution
1000
100
10
1
Number of Bursts
0.1
1.0
10.0
100.0
Photons-cm-2-sec-1

The Great Debate

In April 1920, Harlow Shapley and Heber D. Curtis debated "The Scale of the Universe" at the Smithsonian's Natural History Building in Washington, DC. 75 years later, in April 1995, in commemoration of the `Great Debate'

Donald Q. Lamb

and

Bohdan Paczynski

will debate

"The Distance Scale to Gamma-Ray Bursts"

Martin Rees, Moderator

Introductory Lectures by

Virginia Trimble & Gerald Fishman

Date: 22 April 1995, 1 - 4 pm. Tickets are free but should be requested in writing.
Location: Natural History Museum, Washington, DC (same auditorium as 1920 Great Debate)
Sponsoring Institutions: NASA, Smithsonian, George Mason University

Tickets requests write: 75th Anniversary Astronomical Debate, George Mason University, CSI Institute, Fairfax, VA 22030
For more information on WWW: http://antwrp.gsfc.nasa.gov/diamond_jubilee/debate.html
How closely does history repeat itself?

Spectral Lines?

NO

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BATSE GAMMA-RAY BURST LINE SEARCH. IV. LINE CANDIDATES FROM THE VISUAL SEARCH

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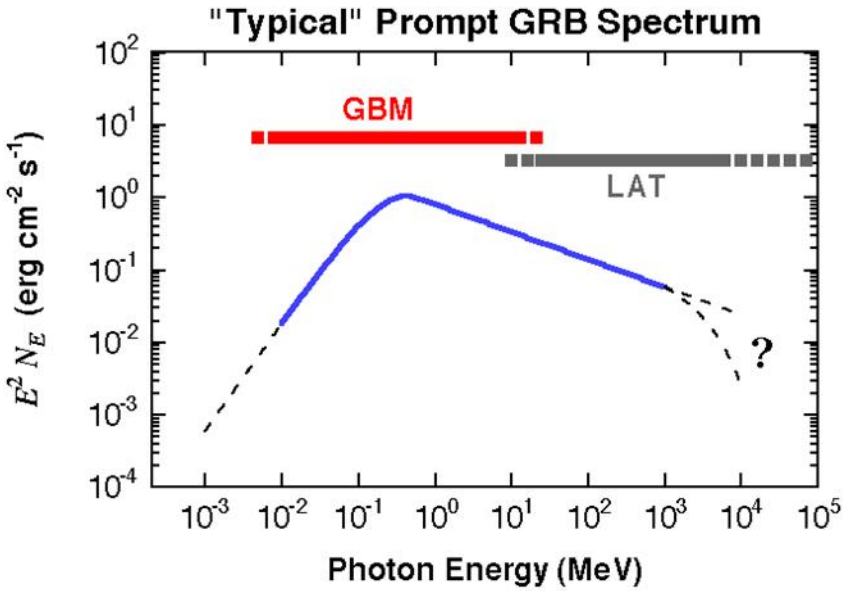
ABSTRACT

We evaluate the significance of the line candidates identified by a visual search of burst spectra from BATSE's Spectroscopy Detectors. None of the candidates satisfy our detection criteria: an F-test probability less than 10^{-4} for a feature in one detector and consistency among the detectors that viewed the burst. Most of the candidates are not very significant and are likely to be fluctuations. Because of the expectation of finding absorption lines, the search was biased toward absorption features. We do not have a quantitative measure of the completeness of the search, which would enable a comparison with previous missions. Therefore, a more objective computerized search has begun.

Subject headings: gamma rays: bursts — line: identification — methods: statistical

Band Function



$$f(E) = \begin{cases} A(E/100)^{\alpha} e^{-E(2+\alpha)/E_{\rm peak}} \\ \quad \text{if } E < \dfrac{(\alpha-\beta)E_{\rm peak}}{(2+\alpha)} \equiv E_{\rm break} \ , \\ A\left[\dfrac{(\alpha-\beta)E_{\rm peak}}{100(2+\alpha)}\right]^{(\alpha-\beta)} \exp(\beta-\alpha)(E/100)^{\beta} \\ \quad \text{if } E \geq \dfrac{(\alpha-\beta)E_{\rm peak}}{(2+\alpha)} \ . \end{cases}$$

BATSE OBSERVATIONS OF GAMMA-RAY BURST SPECTRA. I. SPECTRAL DIVERSITY

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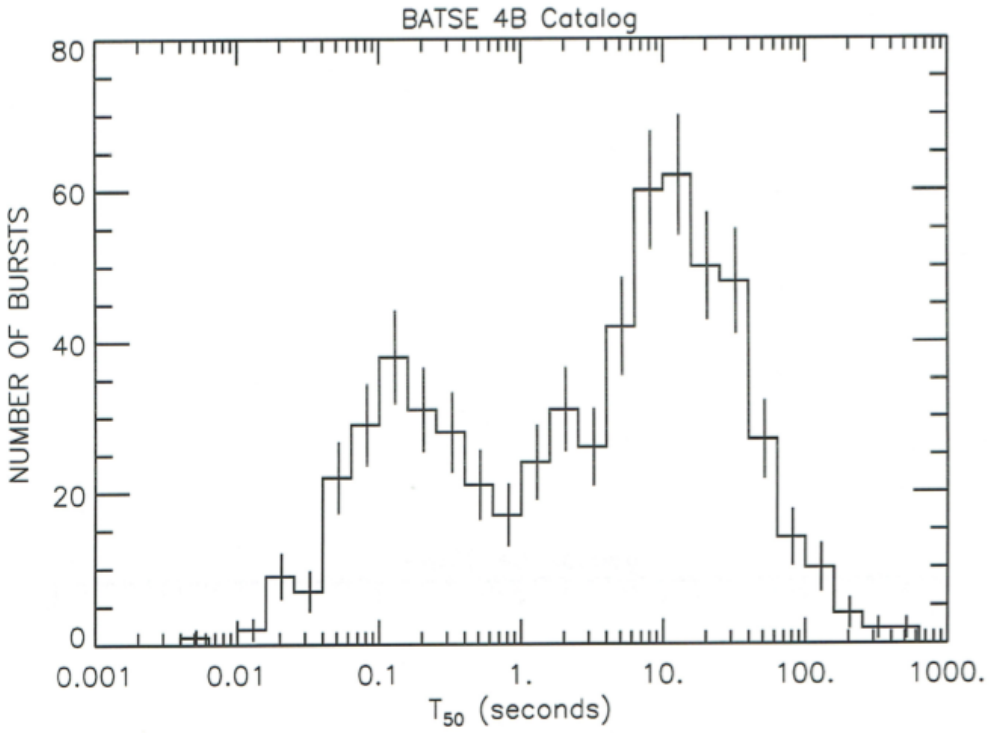
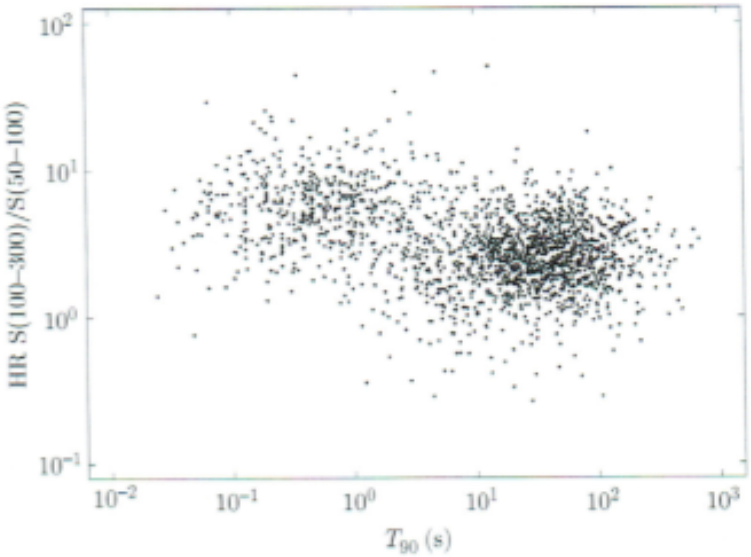
Duration Distribution



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