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The Konus-Wind catalog of gamma-ray bursts with known redshifts. II. Waiting mode bursts simultaneously detected by Swift/BAT

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type:statistic-GRB
comment:分析2005年1月到2018年末期间，KW(waiting mode)和BAT(triggered mode)同时探测到的有可靠红移估计的GRBs

▶ details

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In the Second part of The Konus-Wind Catalog of Gamma-Ray Bursts with Known Redshifts (first part: Tsvetkova et al. 2017; T17), we present the results of a systematic study of gamma-ray bursts (GRBs) with reliable redshift estimates detected simultaneously by the Konus-Wind (KW) experiment (in the waiting mode) and by the Swift/BAT (BAT) telescope during the period from 2005 January to the end of 2018. By taking advantage of the high sensitivity of BAT and the wide spectral band of KW we were able to constrain the peak spectral energies, the broadband energy fluences, and the peak fluxes for the joint KW-BAT sample of 167 weak, relatively soft GRBs (including four short bursts). Based on the GRB redshifts, which span the range $0.04 \le z \le 9.4$, we estimate the rest-frame, isotropic-equivalent energy, and peak luminosity. For 14 GRBs with reasonably constrained jet breaks, we provide the collimation-corrected values of the energetics. This work extends the sample of KW GRBs with known redshifts to 338 GRBs, the largest set of cosmological GRBs studied to date over a broad energy band. With the full KW sample, accounting for the instrumental bias, we explore GRB rest-frame properties, including hardness-intensity correlations, GRB luminosity evolution, luminosity and isotropic-energy functions, and the evolution of the GRB formation rate, which we find to be in general agreement with those reported in T17 and other previous studies.

- 研究样本：2005年1月到2018年末期间，KW(waiting mode)和BAT(triggered mode)同时探测到的有可靠红移估计的GRBs
    - 将这样的样本扩充至338个
- 限制167个较弱且相对较软GRB（包括4个短暴）的peak spectral energies，broadband fluences(10 keV–10 MeV), 以及peak fluxes。
- 利用红移(跨度$0.04 \le z \le 9.4$)计算静系各项同性能量和峰值光度

- 对于14个有采样充分的jet break的GRB，研究了准直修正的能量
- 利用KW全样本(316个长暴)，研究了GRB静系下性质，包括hardness-intensity correlations, GRB luminosity evolution, luminosity and isotropic-energy functions, and the evolution of the GRB formation rate，这些与first part以及以往的研究相符