The 2nd LAT GRB Catalog

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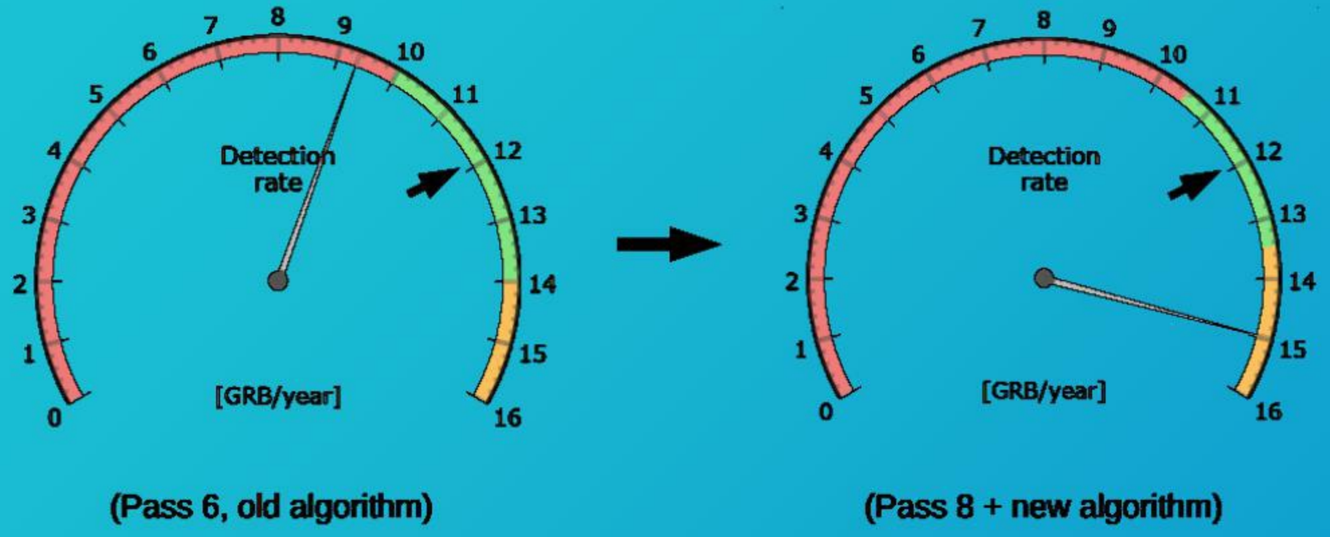
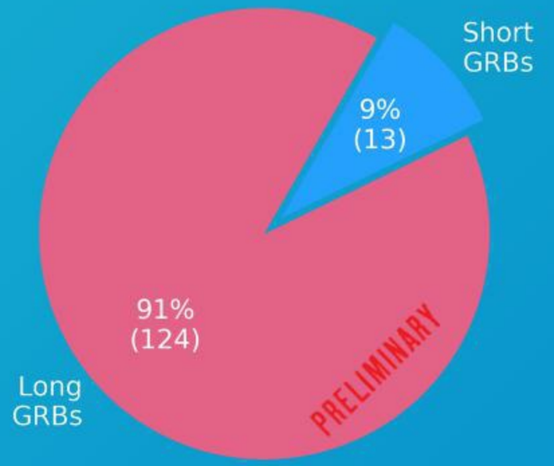
on behalf of the Fermi/LAT team

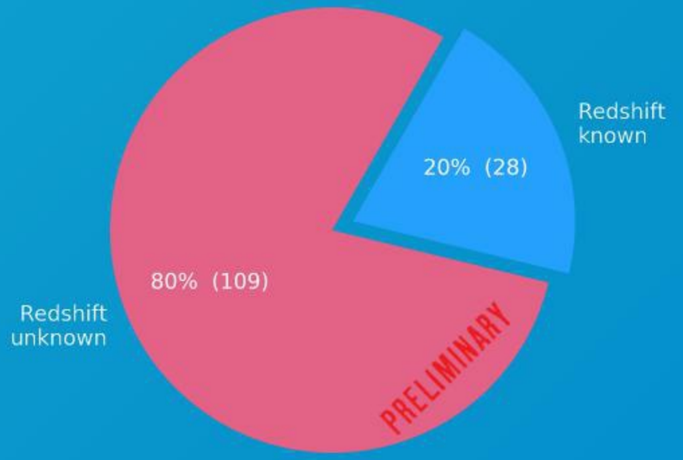


(Pass 6, old algorithm)

(Pass 8 + new algorithm)

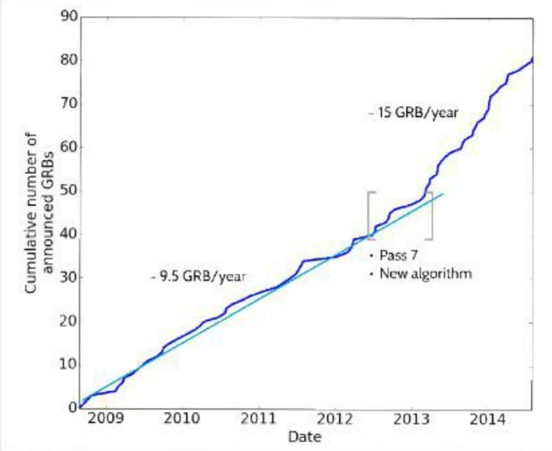
More GRBs per year than expected before the Fermi launch, for a total of 137 GRBs in 9 years

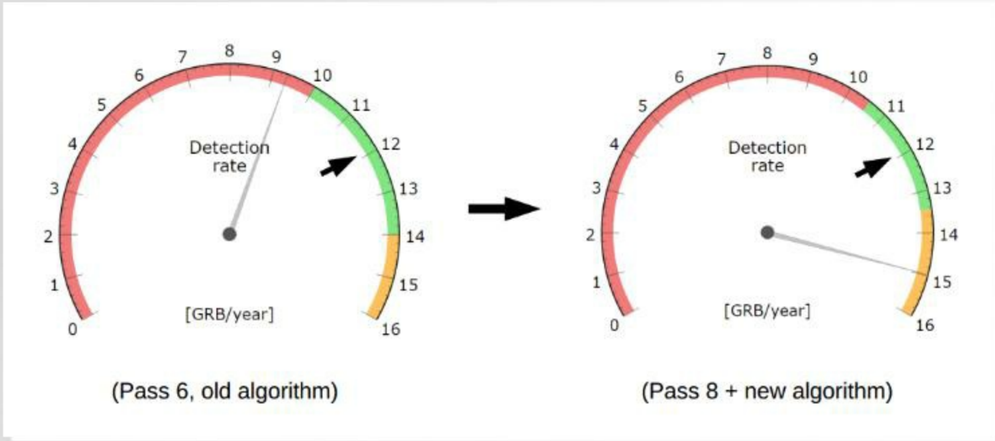




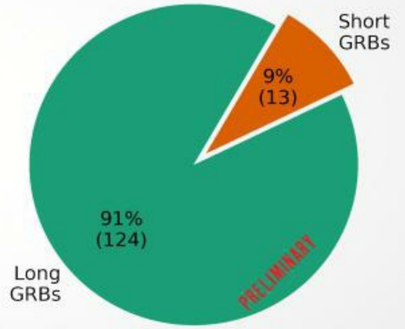
Sample: 137 GRBs

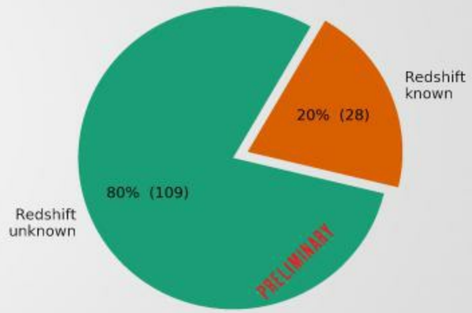
The introduction of a new detection algorithm (Vianello et al. 2015) increased by more than 50% the number of LAT detections





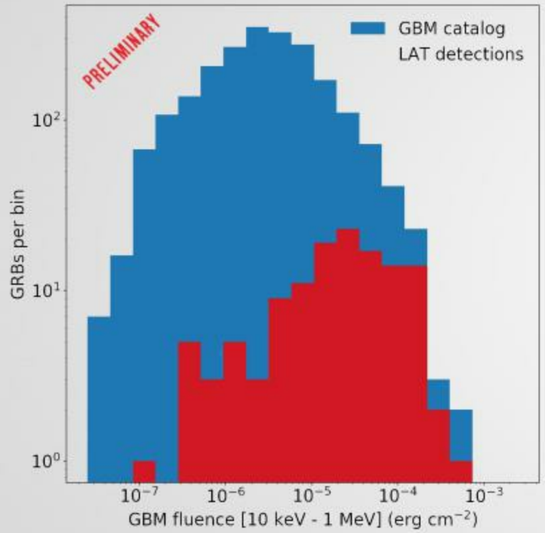
Pre-launch expectation was 12 GRB/y. In the first 3 years we measured 9 GRB/y, the community was starting wondering why (Guetta et al. 2011), now we have 15 GRB/y (exceeding expectation)

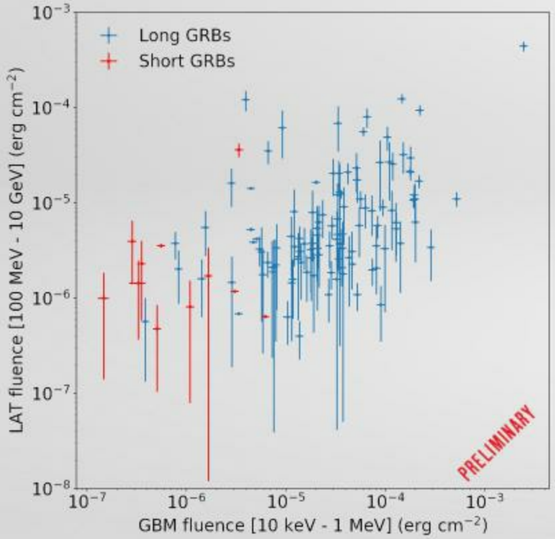




- The new catalog contains 137 GRBs
- Seed of around 2500 GRBs from GBM, INTEGRAL, SWIFT, IPN:
  - 124 long GRBs and 13 short GRBs in 9 years
  - LAT detects ~6% of long GRBs and ~5% of short GRBs (full sky)
    - no significant difference for long and short

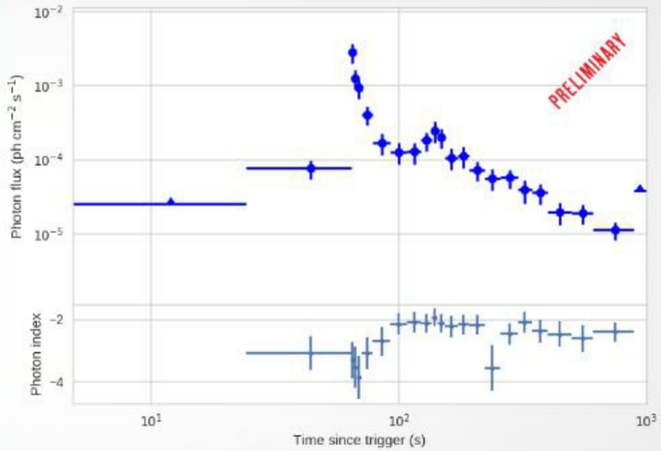
The LAT signal seems to be dominated by a different component than the prompt emission



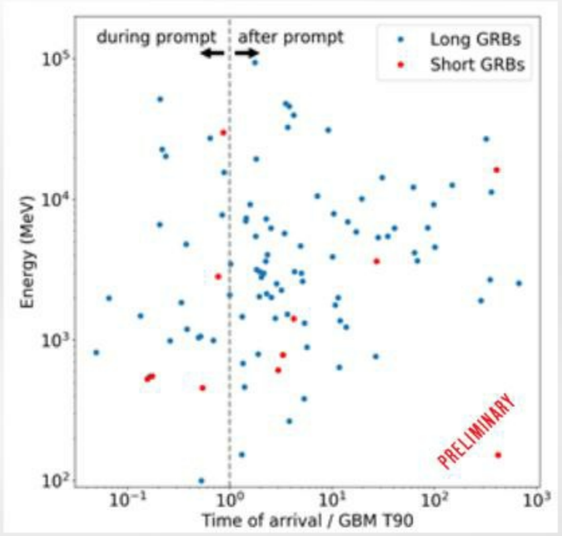


- The low-energy fluence distribution of LAT-detected GRBs peaks at higher fluxes than the general population of GBM-detected GRBs
- However, it is very broad. Indeed, the LAT detects GRBs which are surprisingly faint at low energy
- The distribution for LAT-detected GRBs is biased towards high low-energy fluences also because the spacecraft repoints only bright GBM GRBs, which are therefore more likely to be detected by the LAT

- There is no strong correlation between the low-energy fluence of LAT-detected GRBs and their high-energy fluence
- Even though short GRBs have a much smaller fluence than long GRBs at low energies, they have a very similar fluence in the LAT energy range



- The signal in the LAT lasts much longer than the prompt emission at lower energies



Maximum photon energy vs time of arrival relative to prompt duration

- The highest-energy photons arrive most of the time long after the prompt emission is finished

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