



高海拔宇宙线观测站
Large High Altitude Air Shower Observatory



四川大学
SICHUAN UNIVERSITY

Search for VHE gamma-ray emission from GRB190829A with LHAASO-WCDA triggerless data

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On behalf of LHAASO collaboration

21/07/2021

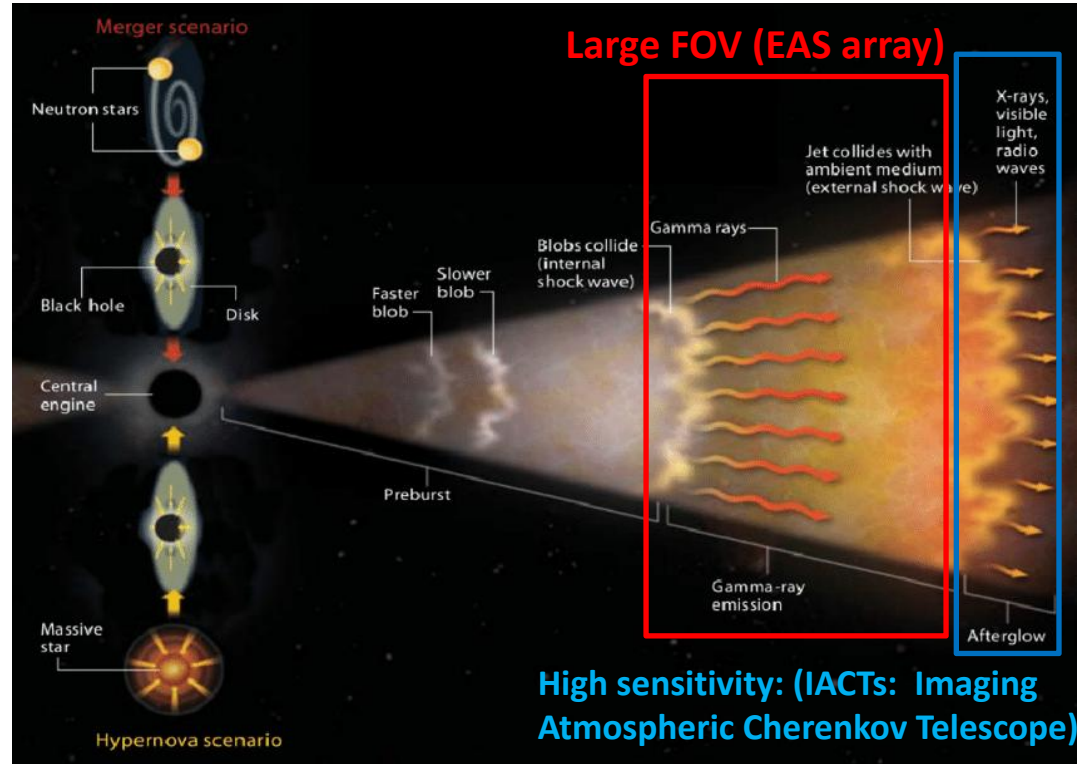
VHE emission from GRB

➤ **TeV emission is possible.**

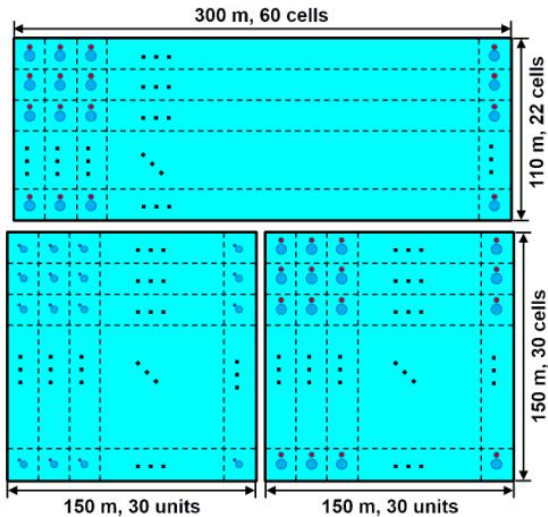
➤ **Significance:**

prompt phase

- **Radiation mechanism,**
- **Lorentz Invariance Violation,**
- **Mechanism of jet formation,**
- **Relativistic bulk motion,**
- **host-galaxies,**
- **EBL, IGMF, ...**

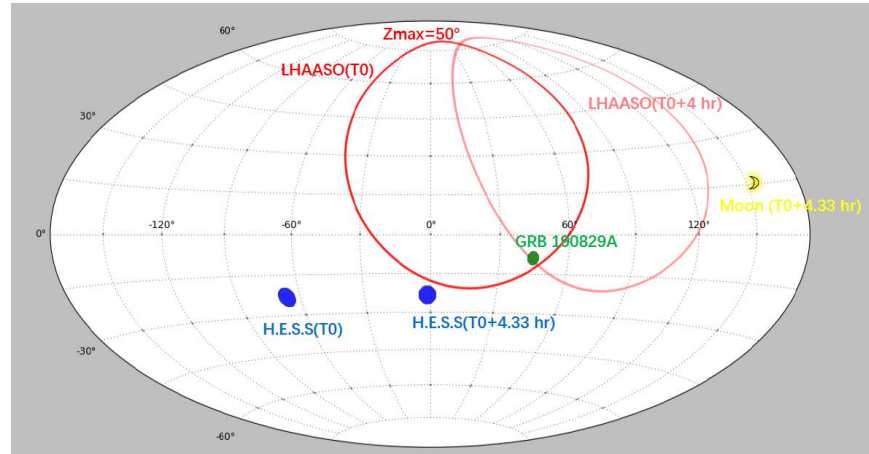


GRB190829A @ LHAASO-WCDA



➤ LHAASO

- Large field of view
- Low threshold:
 - ✓ high altitude
 - ✓ triggerless mode



➤ GRB190829A

- Nearest ($z=0.0785$)
- H.E.S.S. ($> 5 \sigma$) in the long-lasting afterglow
- Occurred at a zenith angle of 46° in the FOV of LHAASO

Methods and Performance

➤ Hit level → Reject Noise

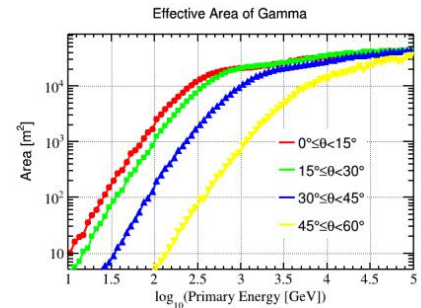
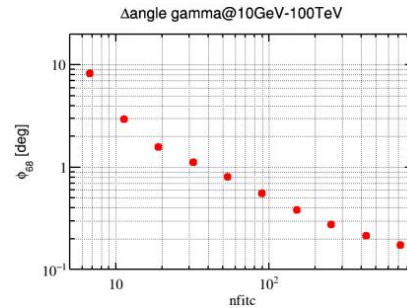
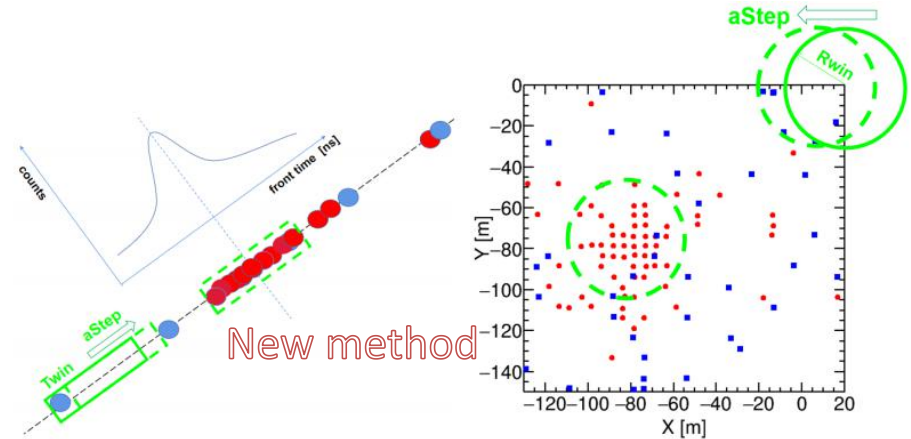
- Time window
- Spatial window

➤ Event level → Reject CR

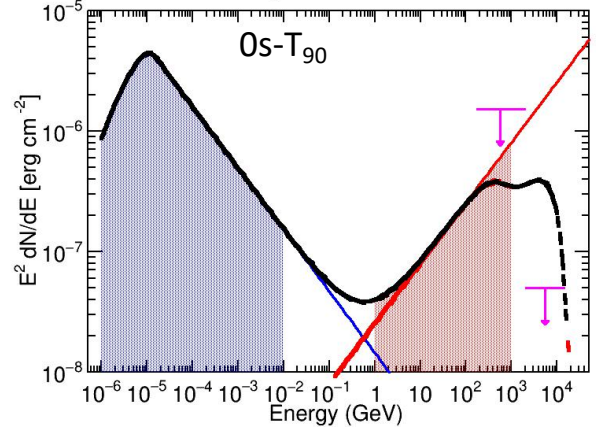
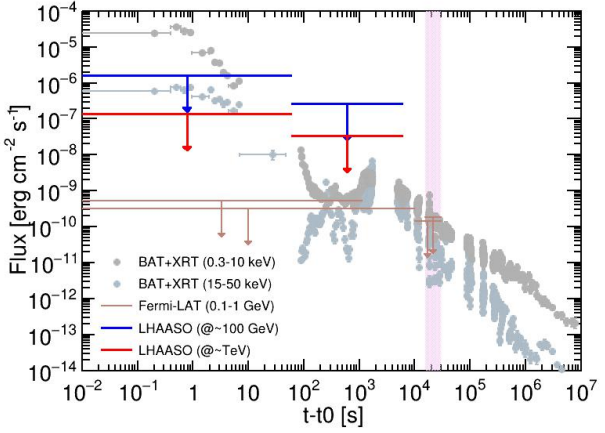
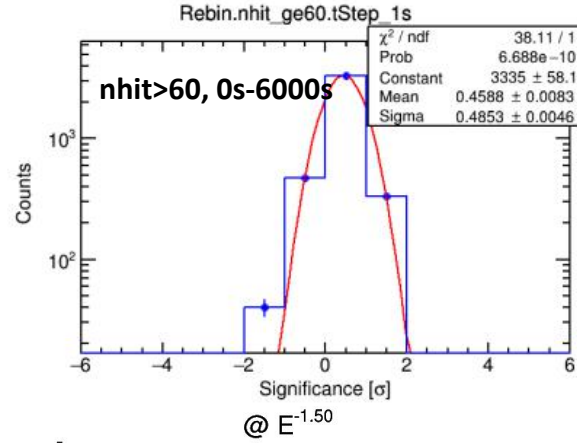
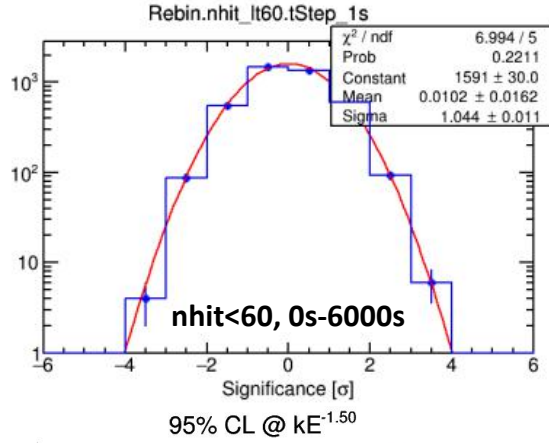
background

➤ Background estimation

➤ Calculate the significance and upper limits



Results



- No indication of VHE emission, neither in the prompt nor in the first 2 hours of afterglow phase, was found.
- We simply compared the upper limit with the flux of a phenomenological spectral model in the prompt phase.

Thank you!