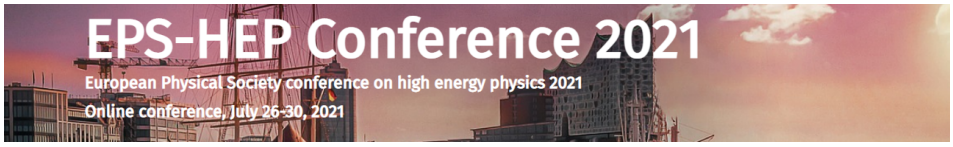

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Very high energy observations of GRBs

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Gamma-ray bursts (GRBs) are transient events releasing a large amount of energy in a short amount of time as electromagnetic radiation. In the past decades, both observational and theoretical efforts were made to understand their inner workings, both in the prompt and afterglow phase. The origin of the GeV emission detected by Fermi-LAT in several GRBs is one of the aspects of GRB physics which is currently not well understood. Observations at very high energies (VHE, E>100 GeV) by Cherenkov telescopes, given their better sensitivity, can provide crucial information to understand the mechanisms behind such high energy components. After almost 15 years of efforts, the MAGIC and H.E.S.S. collaborations finally detected their first bursts, GRB190114C and GRB180720B respectively, opening a new era in the study of GRBs. Such detections proved the presence of a new additional emission component up to TeV energies in the GRB afterglow phase, which can be explained by the synchrotron self-Compton process. Other two GRBs were also detected, GRB190829A by H.E.S.S. and GRB201216C by MAGIC, bringing more information but also revealing a complex picture to explain the origin of the VHE emission. In this context, observations by future facilities as the Cherenkov Telescope Array (CTA) observatory will play a crucial role to increase our understanding of the VHE emission in GRBs. In this contribution I will present the outstanding results accomplished in the last years by Cherenkov telescopes in the observation of GRBs and provide an overview of what can be achieved with future instruments.

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Collaboration / Activity

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