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Blazar Alerts with the HAWC Online Flare Monitor

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The High Altitude Water Cherenkov (HAWC) Gamma Ray Observatory monitors the gamma-ray sky in the 100 GeV to 100 TeV energy range with >95% uptime and unprecedented sensitivity for a survey instrument. The HAWC Collaboration has implemented an online flare monitor that detects episodes of rapid flaring activity from extragalactic TeV sources in the declination band from -26 to 64 degrees. This allows timely alerts to be sent to multiwavelength instruments without human intervention. The preliminary configuration of the online flare monitor achieves sensitivity to flares of at least 1 hour duration that attain an average flux of 10 times that of the Crab Nebula. While flares of this magnitude are not common, several flares reaching the level of 10 Crab have been observed in the TeV band in the past decade. With its survey capabilities and high duty cycle, HAWC will expand the observational data set on these particularly extreme flares. We will discuss results from the first alerts issued by the online flare monitor and the prospects for multiwavelength studies of blazar dynamics, the extragalactic background light, and the intergalactic magnetic field using extreme blazar flares detected by HAWC. We will also highlight upcoming improvements to the flare monitor that will extend its sensitivity to weaker flares.

Collaboration

HAWC

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