

Variability of the Mg II 2798 λ Emission Line during the 2017 Nonthermal Outburst in the Gamma-Ray Bright Quasar 1156+295

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The quasar 1156+295 (4C 29.45, Ton599) underwent a dramatic nonthermal outburst in late 2017, with detection at energies > 100 GeV. The outburst was essentially simultaneous at gamma-ray and optical bands, indicating co-spatiality of the emission regions. We present multi-epoch optical spectra of 1156+295 obtained with the 4.3 m Lowell Discovery Telescope at various times, including the outburst period. We find that the flux of the Mg II 2798-Angstrom emission line, as well as blended Fe II lines at shorter wavelengths, increased with the optical synchrotron continuum with a delay less than 2 weeks. We interpret such a correlation within a scenario that the line-emitting clouds lie alongside the jet, well outside the canonical broad-line region. These extended polar clouds have the properties needed to be the source of seed photons that are scattered to gamma-ray energies.

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Primary author: HALLUM, Melissa

Presenter: HALLUM, Melissa

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