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# The New Spectral and Temporal Variability Phase of OJ 287: A Multi-wavelength View

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The BL Lac object OJ 287 exhibits a regular ~12 years quasi-periodic outburst in optical band. The latest of this outburst occurred in December 2015 and since then till July 2017, it has exhibited intense multi-wavelength (MW) activity with many new features never seen before. The overall MW activity can be divided into two phases: November 2015 –May 2016, exhibiting strong variability from near-infrared (NIR) to Fermi-LAT γ-ray energies (0.1 –300 GeV) and September 2016 –July 2017, showing intense NIR to X-ray variability with highest ever reported X-ray state of the source and a concurrent detection at very high energies by VERITAS but no variability at LAT γ-ray energies. Most of the variations during both the phases are accompanied by a strong change in polarization degree and polarization angle of the source. In the first duration, the MW variations are simultaneous while the spectral energy distributions (SEDs) show new component in NIR-optical and a change in the shape of -ray spectra along with shift. The NIR-optical bump is consistent with the standard disk description while the γ-ray spectra can be explained by inverse Compton scattering of photons from the BLR region which has been detected during such close encounter times in OJ 287. Variations during the second phase are also simultaneous except for one duration where X-rays leads the optical-ultraviolet by ~5-6 days. This duration also suggests the presence of systematic variations, appearing first at higher energies and then at lower. On the other hand, the broadband SEDs during high states is a sum of the typical OJ 287 SED with modified -ray spectrum and an HBL SED and can be reproduced in a two zome model, one located at sub-parsec scales and other at parsec scales.

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