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Modeling the Multi-wavelength Polarization and Spectral Energy Distributions of Blazars

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In the radio through optical-UV/X-ray regime, blazars emit highly polarized (nonthermal) synchrotron emission. Emission from the dusty torus, broad line region, accretion disk and host galaxy is of thermal origin and unpolarized. In some cases, their contribution is visible in spectropolarimetry wherein the unpolarized thermal emission dilutes the synchrotron polarization. However, partially ordered magnetic fields decreasing with distance along the jet from a shock also yield a decrease of polarization towards longer wavelengths in some sources. The Large Science Program "Observing the Transient Universe" using the *Southern African Large Telescope* provides target-of-opportunity spectropolarimetry observations of γ-ray bright blazars, indicating a decrease in the total degree of polarization towards shorter or longer wavelengths in many sources. The program includes co-ordinated multi-wavelength observations from the *Las Cumbres Observatory*, the *Swift*-XRT and the *Fermi*-LAT. A shock acceleration model including the effects of magnetic-field compression and gradual restoration of the original magnetic-field configuration behind the shock is implemented to study the multi-wavelength spectral energy distributions and spectropolarimetry of blazars observed in steady states. In this presentation, the model is discussed in application to 3C 273, 3C 279 and 4C+01.02. Spectropolarimetry contributes to our understanding of the high-energy polarization, most notably the *IXPE* observations of 3C 273 and 3C 279.

Track

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