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## Jets, Blobs, and Circular Polarization: Using PLUTO to Model Time Domain Variability in Blazars

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Extragalactic jets are highly collimated beams of relativistic plasma that emanate from the centers of Active Galactic Nuclei (AGN). Despite decades of dedicated observation and study the underlying plasma composition of these relativistic outflows remains largely unknown. The polarized emission emanating from relativistic jets, however, can now be imaged on micro arcsecond scales using Global mm-wave Very Long Baseline Interferometry (VLBI). These polarimetric observations provide us with a powerful probe of the underlying nature of the jet plasma. In parallel to this observational advance, modern computational resources have allowed for increasingly sophisticated numerical jet simulations. Relativistic magnetohydrodynamic (RMHD) jet models are able to reproduce many of the observed macroscopic features of these plasma flows (e.g., recollimation shocks, jet sheaths & spines, bow shocks, & enshrouding jet cocoons). This talk presents a study of the variability in the circular polarization produced by a blob of relativistic plasma passing through a standing recollimation shock within a jet. This is accomplished through the use of the PLUTO code in concert with full Stokes polarized radiative transfer carried out (post-process) with the ray-tracing code RADMC-3D.

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**Classifica Sessioni:** Frontiers of MHD simulations at all scales: jets, outflows, and intracluster medium