

NRAO/Socorro Colloquium Series**Matt Lister***Purdue University*

Jet Evolution in Active Galactic Nuclei**Abstract:**

Relativistic outflows are prevalent throughout the universe and represent some of the most energetic phenomena ever discovered. At many wavebands, the sky away from the galactic plane is dominated by active galactic nuclei (AGN) containing powerful jets that are pointed nearly directly at us. The observed properties of these 'blazars' are heavily influenced by special relativistic effects, and have been extensively studied with the Very Long Baseline Array and other instruments. MOJAVE is a VLBA key project that is studying the structure and evolution of these jets on parsec-scales. Our program has found that apparent superluminal motion is common in compact radio-selected AGN, indicating Lorentz factors of up to ~ 50 in outflows oriented at a few degrees from the line of sight. In many instances, the projected sky direction of the jet slowly changes over time, which is indicative of slow precession-like behavior of energized channels within the flow. Recently we have been obtaining regular 15 GHz VLBA full polarization images of a new blazar sample selected on the basis of hard-spectrum gamma-ray flux. Only about 10% of these have previously been monitored with the VLBA, and they show slow apparent jet speeds that appear to be inconsistent with the very high jet speeds inferred from emission modelling of rapid variability seen at gamma-ray energies. We are currently conducting large scale multi-configuration VLA and LOFAR surveys of our AGN samples to look for kiloparsec-scale indicators of jet precession, and to explore the relation between overall jet power, speed, and gamma-ray emission.

March 6, 2015**11:00 am****Array Operations Center Auditorium****All NRAO employees are invited to attend via video, available in Charlottesville Auditorium, Green Bank Auditorium, and VLA Video Conference Room.**Local Host: Walter Max-Moerbeck
