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## Symmetric Achromatic Variability: A New and Totally Unexpected Phenomenon

*Thursday 10 August 2017 16:00 (30 minutes)*

We have discovered a rare new form of long-term radio variability in the light-curves of active galaxies (AG) (arXiv:1702.06582, arXiv:1702.05519) — Symmetric Achromatic Variability (SAV) — a pair of opposed and strongly skewed peaks in the radio flux density observed over a broad frequency range. We propose that SAV arises through gravitational milli-lensing when relativistically moving features in AG jets move through gravitational lensing caustics created by  $10^3$ – $10^6$  solar mass subhalo condensates or black holes located within intervening galaxies. The lower end of this mass range has been inaccessible with previous gravitational lensing techniques. This new interpretation of some AG variability can easily be tested and if it passes these tests, will enable a new and powerful probe of cosmological matter distribution on these intermediate mass scales, as well as provide, for the first time, micro-arcsecond resolution of the nuclei of AG — a factor of 30–100 greater resolution than is possible with ground-based millimeter VLBI.

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