

Searching for Radio-Loud Gravitational Lenses in VLASS

Thursday, 9 May 2024 16:25 (15 minutes)

Gravitational lensing provides a powerful tool for studying the nature of dark matter given its sensitivity to any mass along the lensing line of sight. Dark subhalos with no luminous stellar component cause astrometric and photometric anomalies, which can be observed given sufficient angular resolution. While these observations are possible with Very Long Baseline Interferometry (VLBI), the number of lensed radio sources is orders of magnitude lower than the total number of lenses, with only about 50 currently known.

In this talk, I present the results of a pilot project to discover new radio-loud gravitationally lensed sources. Using Very Large Array (VLA) follow-up to VLA Sky Survey (VLASS) selected lens candidates, I report 5 new radio-loud gravitational lenses, a 10% increase in the present sample size. I will also discuss plans for future observations in which we expect to further extend this sample by 50%, laying the groundwork for a statistically robust VLBI program to provide new constraints on dark matter. Finally, I discuss the applicability of this type of program to the observatories of the future, including SKA-1 and ngVLA.

keywords

cosmology, surveys, AGN, gravitational lensing

In-person or online?

unsure

Career level

Student

Primary author: MARTINEZ, Michael (University of Wisconsin - Madison)

Presenter: MARTINEZ, Michael (University of Wisconsin - Madison)

Session Classification: VLBI & Cosmology