Department of Physics and Materials Science

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A Young AGN-Driven Outflow in the Dual AGN Mrk 266

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Abstract: Dual active galactic nuclei (AGN), galaxy mergers in which both super massive black holes (SMBH) are accreting matter, offer a unique opportunity to probe the relationship between SMBHs and their host galaxies as well as the role of major mergers in triggering AGN activity. The confirmed dual AGN Mrk 266 has been studied extensively with multi-wavelength imaging. However, high spatial resolution integral field unit (IFU) spectroscopy of Mrk 266 provides an opportunity to probe the kinematics of both the merger event and AGN feedback. We present for the first time high spatial resolution kinematic maps for both nuclei of Mrk 266 taken with the Keck OSIRIS IFU spectrograph, utilizing adaptive optics to achieve a resolution of 0.23". Using the M-σ relation for mergers, we infer a SMBH mass of approximately 1.6 x 10^7 M⊙ for the southwestern nucleus. Additionally, we report the detection of a compact, AGN-driven outflow of highly ionized gas in the southwestern nucleus with a timescale of approximately 2.2 Myr, indicating the merger event has likely triggered the AGN activity in Mrk 266 SW. It is widely believed that merger events can trigger AGN activity, and our results provide direct evidence of this phenomenon.

Bio: Mason Ruby is a third-year graduate student at the University of Memphis. In 2018 he graduated from Union University in Jackson, TN with a BS in Physics with Honors. He is working under Dr. Müller-Sánchez supervision at the University of Memphis and plans to earn a PhD studying galaxy mergers and their effects on AGN activity. He also has interests in creating data reduction and other support software. He recently gave an oral presentation at the 241st meeting of the American Astronomical Society with a scholarship from the College of Arts and Sciences of the University of Memphis.

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