2MASS 1631: A Merging Galaxy Triple Hosting a Potential Dual AGN

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Galaxy mergers: galaxy growth, gravitational wave sources

- Our galaxy and others have merged in the distant past – and will again
- When galaxies merge, the black holes in their centers likely merge, too—emitting gravitational waves
This system consists of three galaxies merging.

The number of known, close triple mergers with Active Galactic Nuclei (AGN) activity is fewer than 10.
Data sources for this project

- **OPTICAL**: Multi-Unit Spectroscopic Explorer (MUSE) on the European Southern Observatory’s VLT system
- **NEAR INFRARED**: W. M. Keck Observatory/OSIRIS
- **RADIO**: Atacama Large Millimeter/Submillimeter Array
- **X-RAY**: Chandra X-ray Observatory
2MASX J16311554+2352577
Triple Merger - Overview

• This system consists of three galaxies merging
• The number of known, close triple mergers with Active Galactic Nuclei (AGN) activity is fewer than 10
• Two of these seem to be Active Galactic Nuclei (AGN): their central black holes are emitting tremendous energy
• The small northern galaxy may have passed through the other two already
What we know so far

• Velocity of material (right)
• Composition (elements/molecules)
• Dynamics
• Luminosity

What is happening in each merging core?
Ongoing studies

• Why do we see different things in each core?
• What has happened with this system? Has the northern core already passed through?
• Detailed studies of this object will allow us to better understand the context in which black holes merge.

What surprises lay in store?

AGN criteria met (shown in red)
Press Release

https://cmns.umd.edu/news-events/features/4798