

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

J. Williams<sup>1</sup>, M. Koss<sup>2</sup>, R. Mushotzky<sup>1</sup>, D. Stern<sup>3</sup>,  
E. Treister<sup>4</sup>, F. Harrison<sup>5</sup>, L. Blecha<sup>6</sup>

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Co-authors & BASS Collaboration

1. University of Maryland
2. Eureka Scientific
3. Jet Propulsion Laboratory
4. Pontificia Universidad Católica de Chile
5. California Institute of Technology
6. University of Florida

# 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

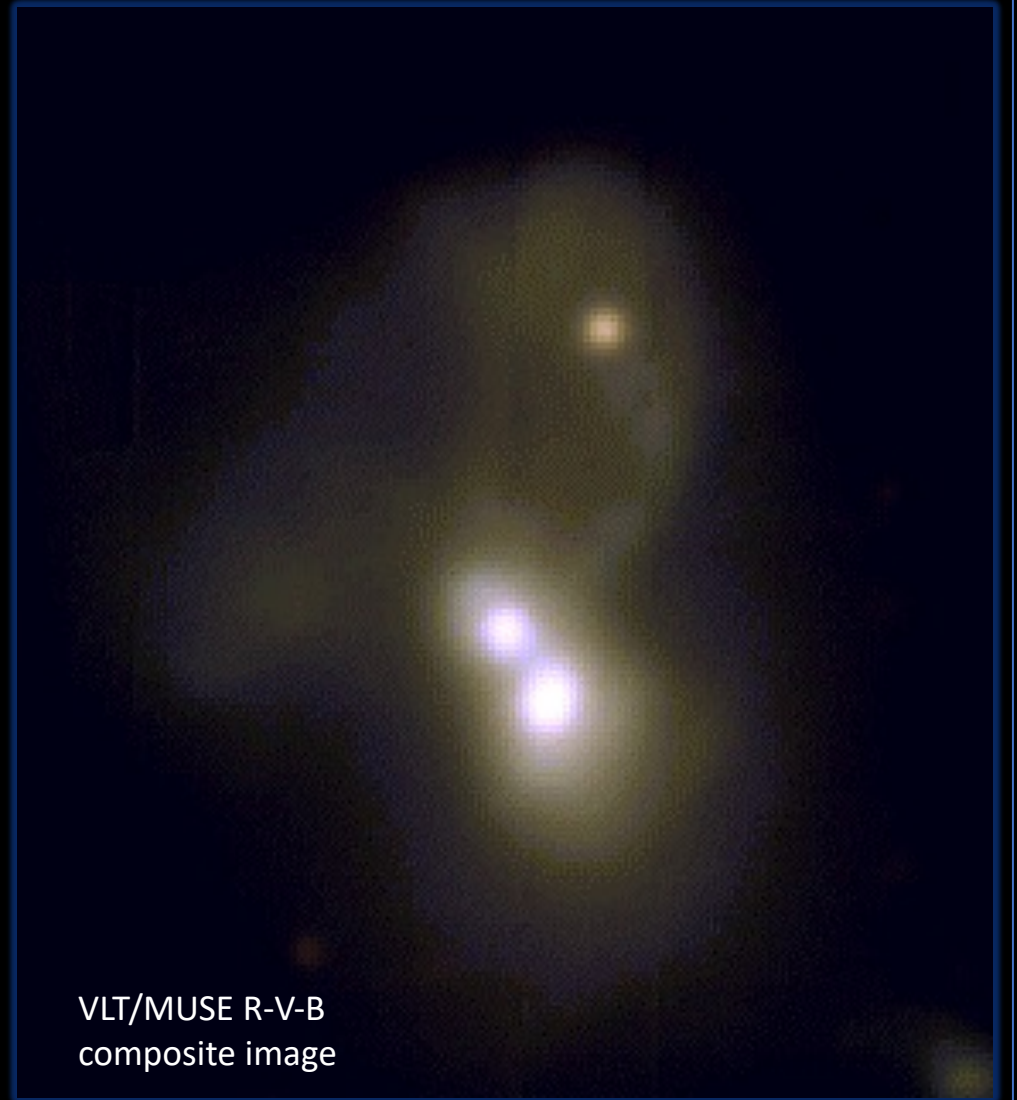


Video credit:  
L. Blecha

# 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



# 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



Picture Credit: ESO/G. Hüdepohl (atacamaphoto.com), CC BY 4.0



Picture Credit: ALMA, via NSF.gov



Picture Credit: Paul Hirst, CC BY-SA 2.5

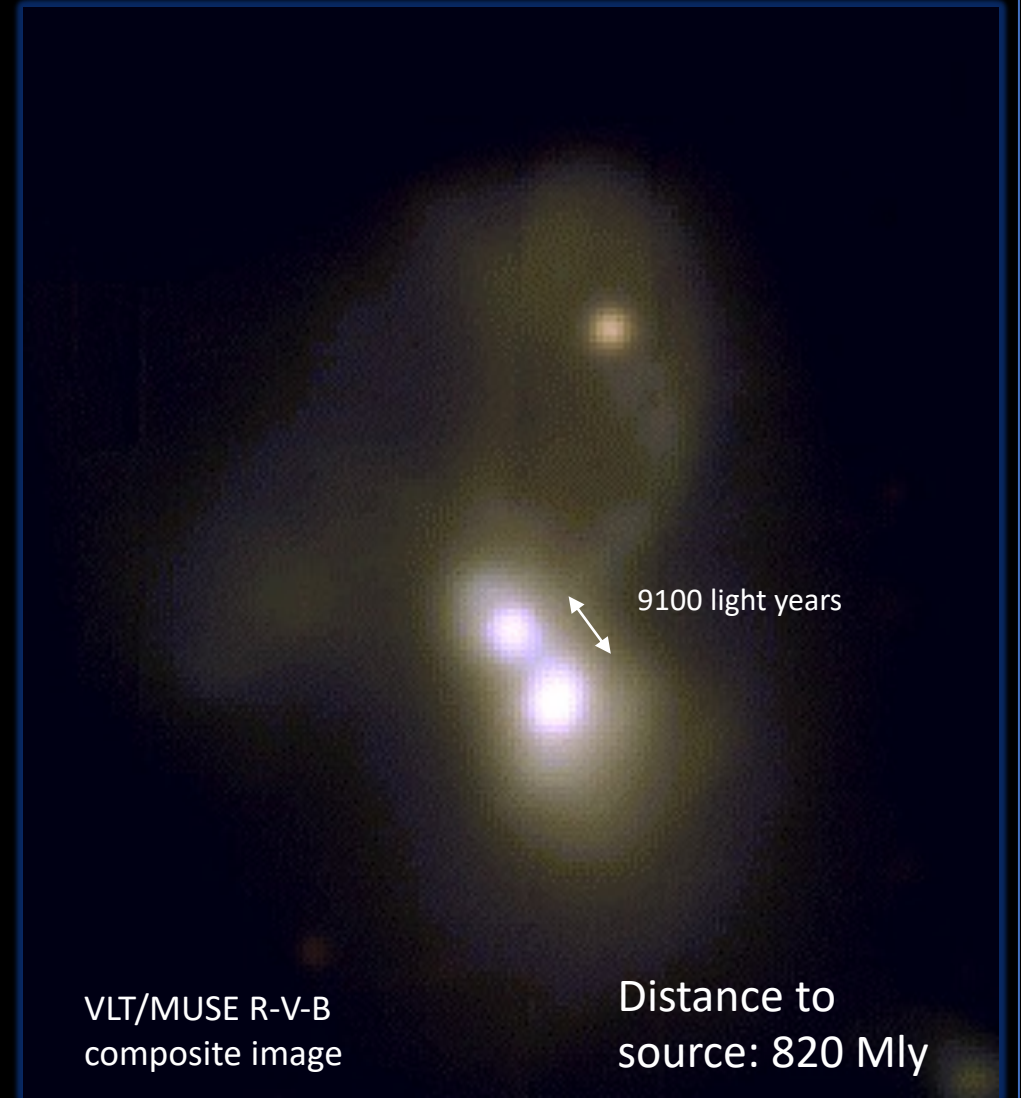


Picture Credit: NASA/CXC/NGST, via NASA.gov

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## 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

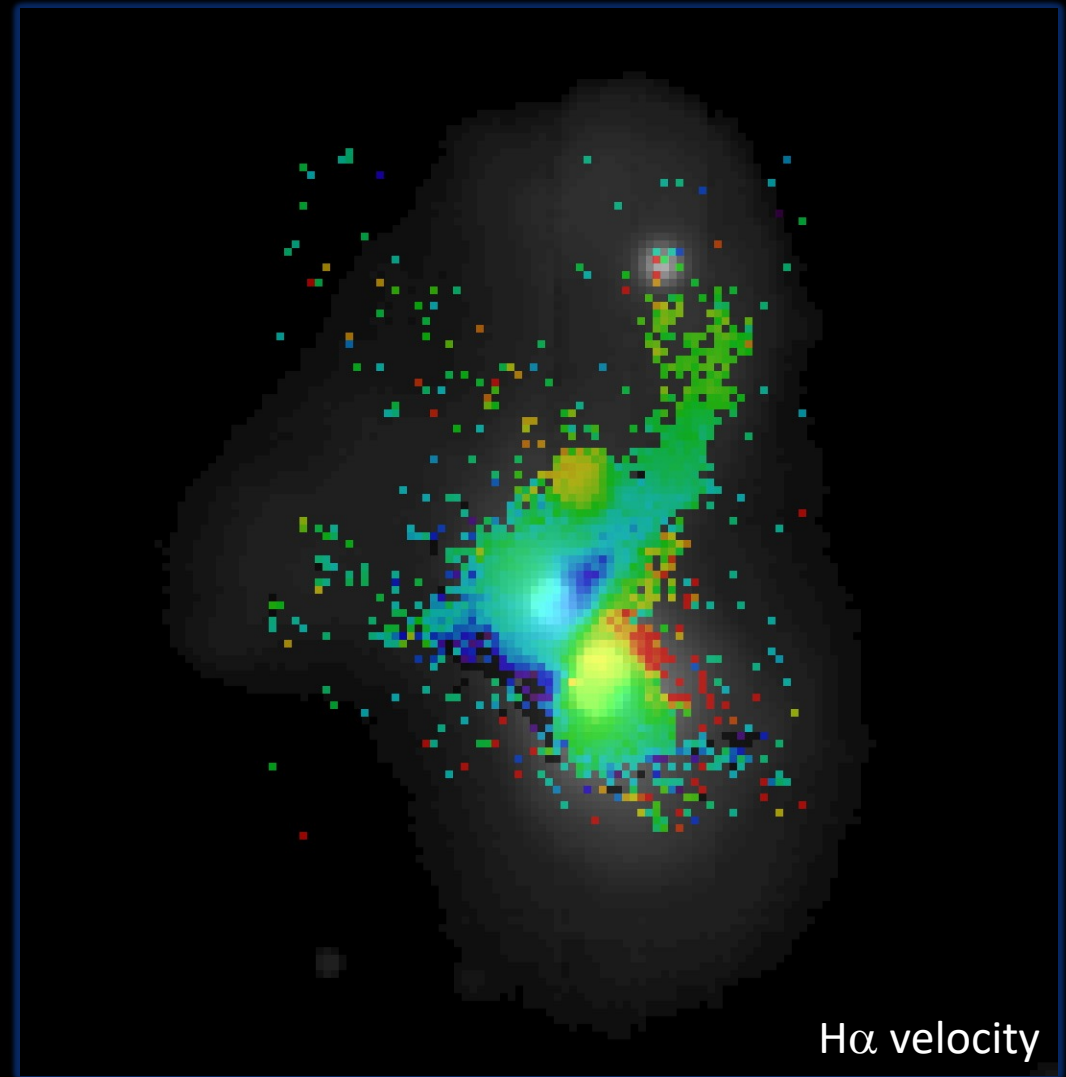




# What we know so far

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

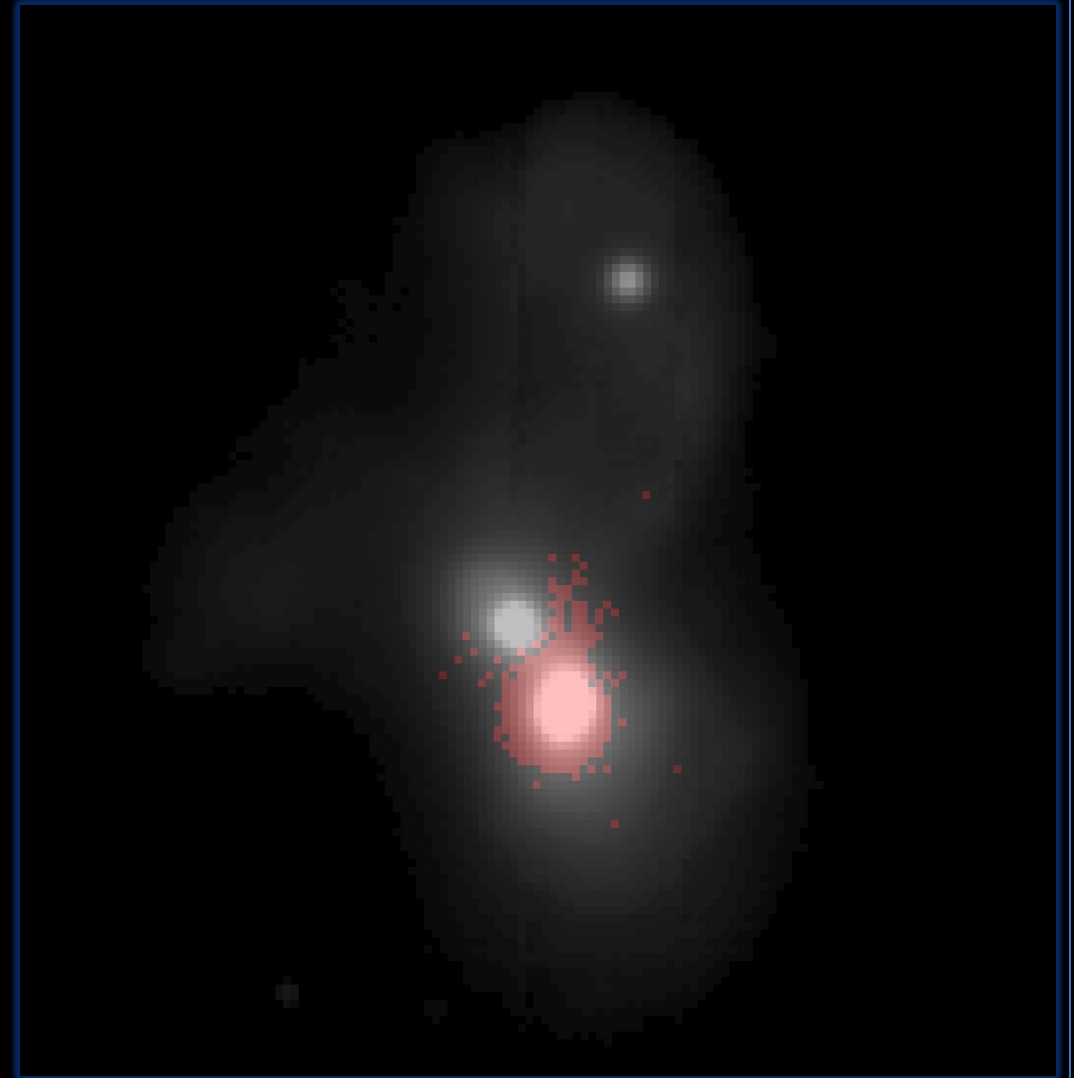
What is happening in each merging core?



# 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>