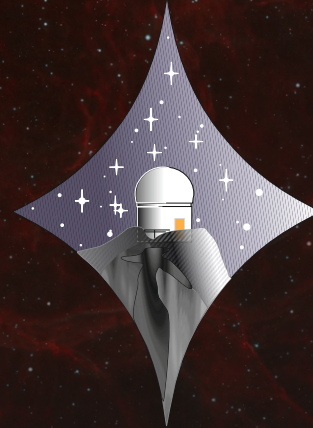


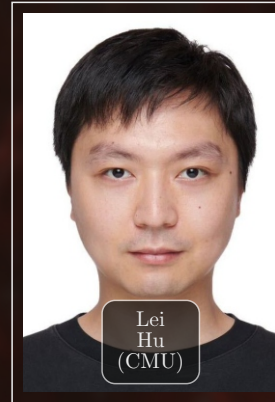
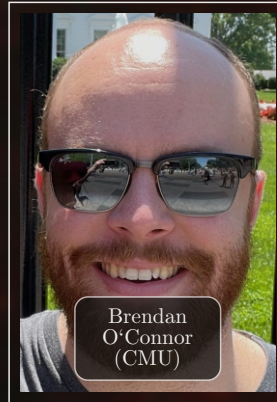
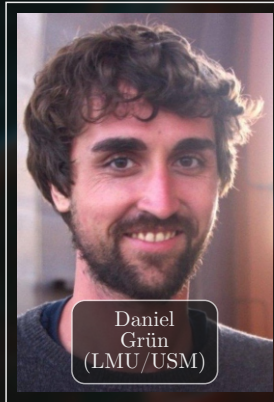
Multi-Messenger Astrophysics 2024

Chasing Shadows: Unveiling the Electromagnetic Secrets of Binary Black Hole Mergers

JULIAN SOMMER



The Team



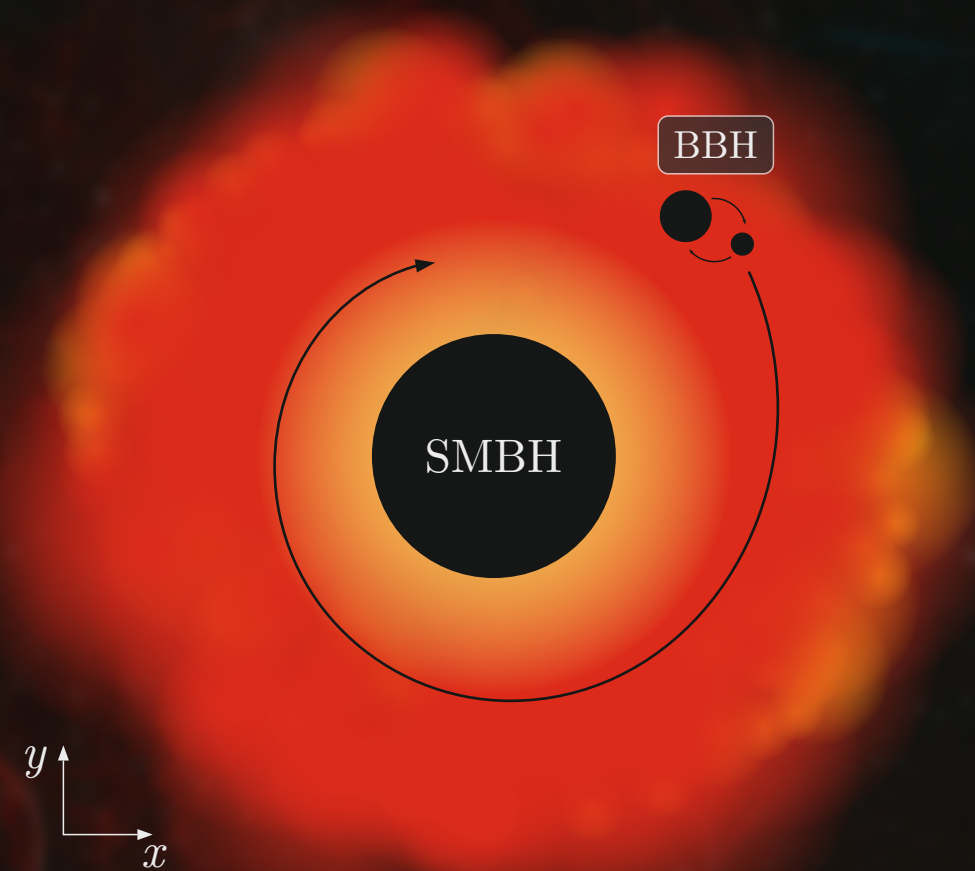


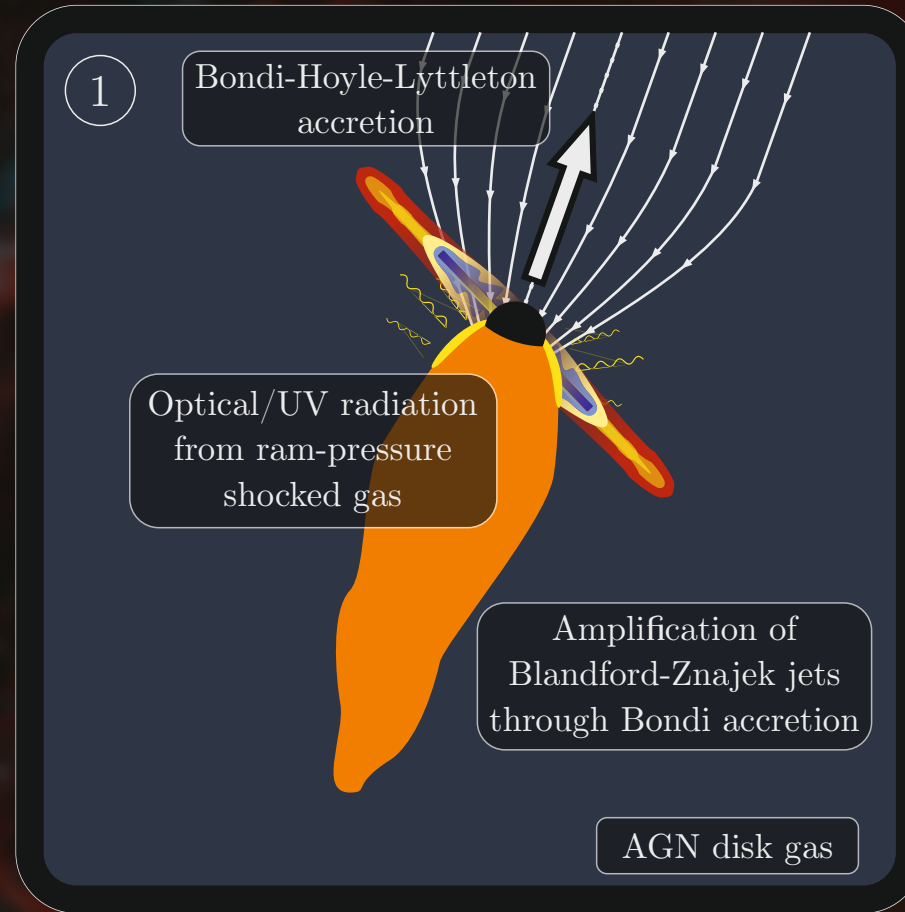
Why do we care?

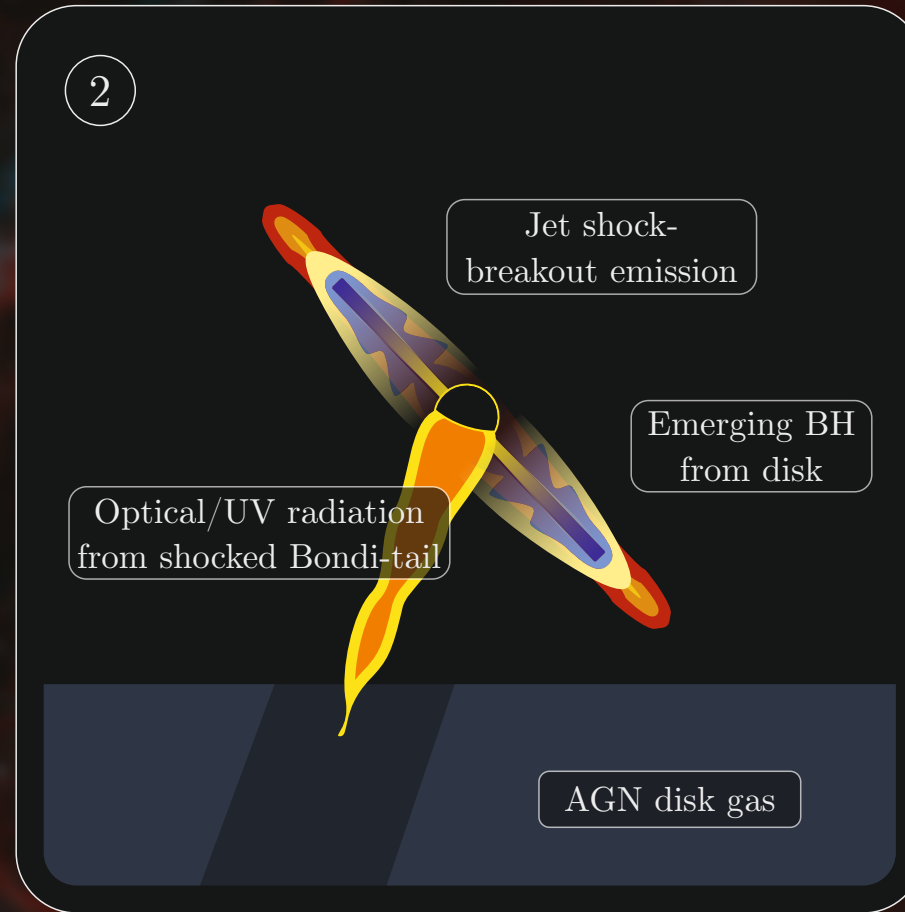
- Formation of high stellar mass black holes uncertain

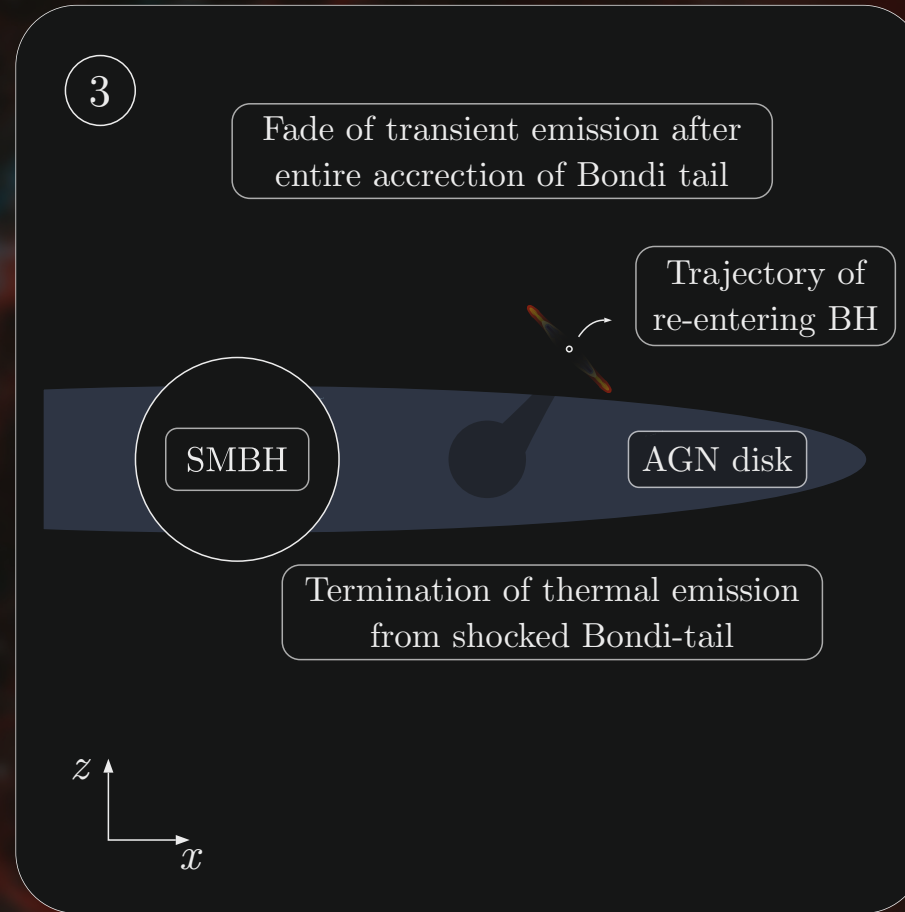
Cosmological Implication

- Goal to cross-identify spectroscopic host redshift with GW detection luminosity distance by LIGO/Virgo/Kagra
- Distances and Hubble Tension











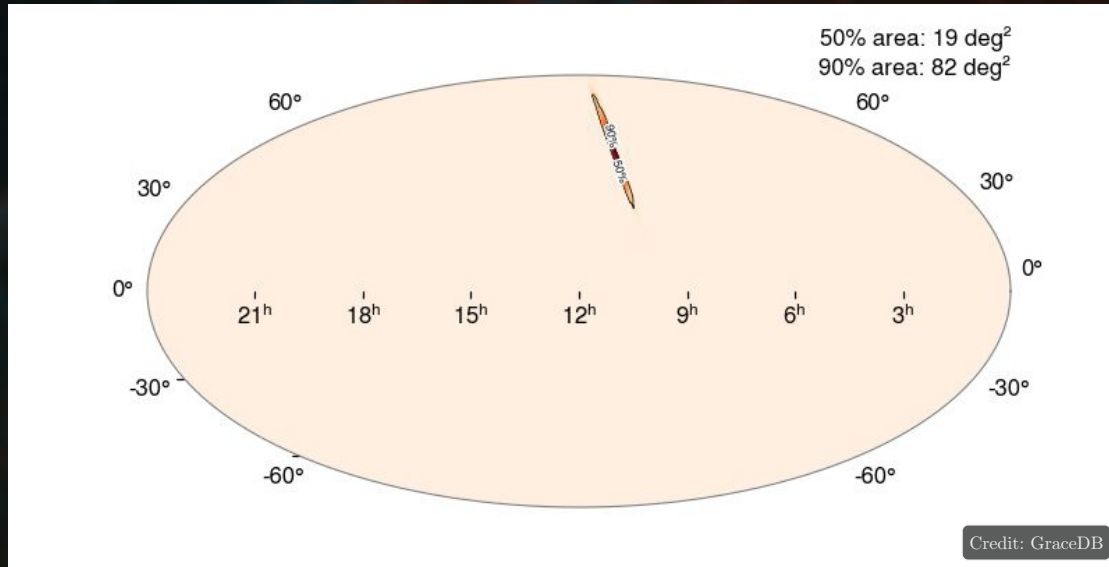
Instruments

- Wendelstein 2.1 m telescope:
Wide field imager + 3-channel optical-NIR camera
- Coordination with DECam Survey GW-MMADS
- Spectroscopic redshifts by DESI

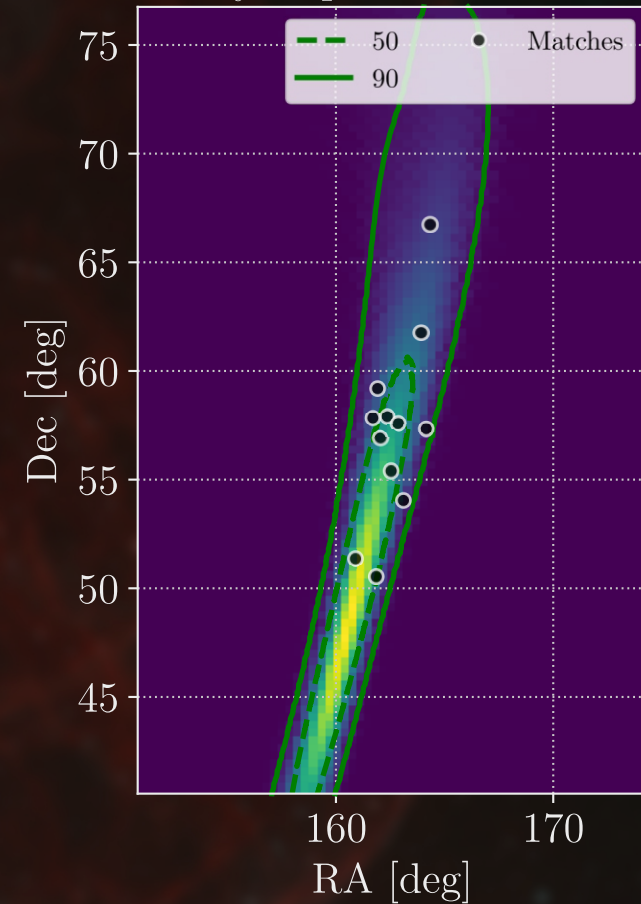
Target Selection

1. Match spectroscopic redshift DESI data
in 99% credible region
2. Select objects with highest probability
3. Select objects by observational feasibility





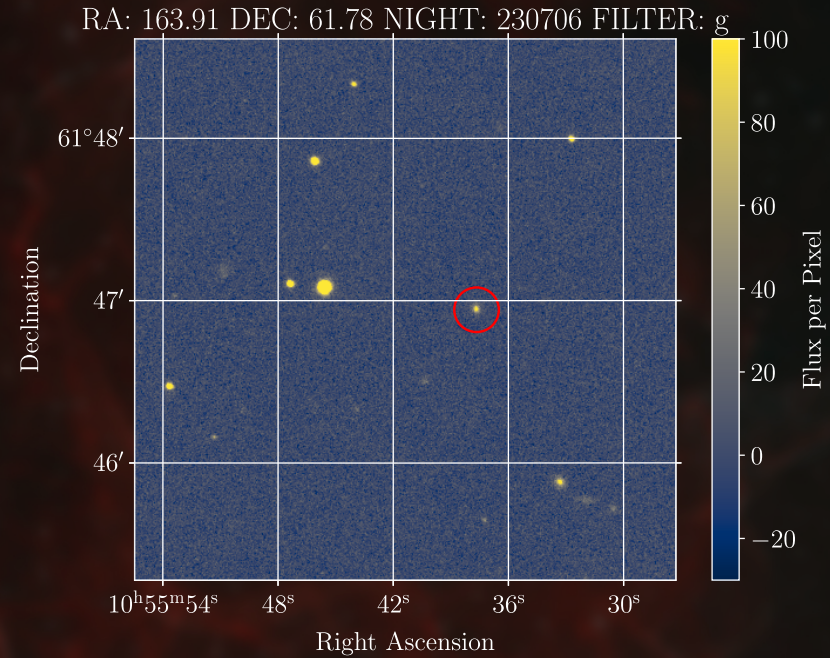
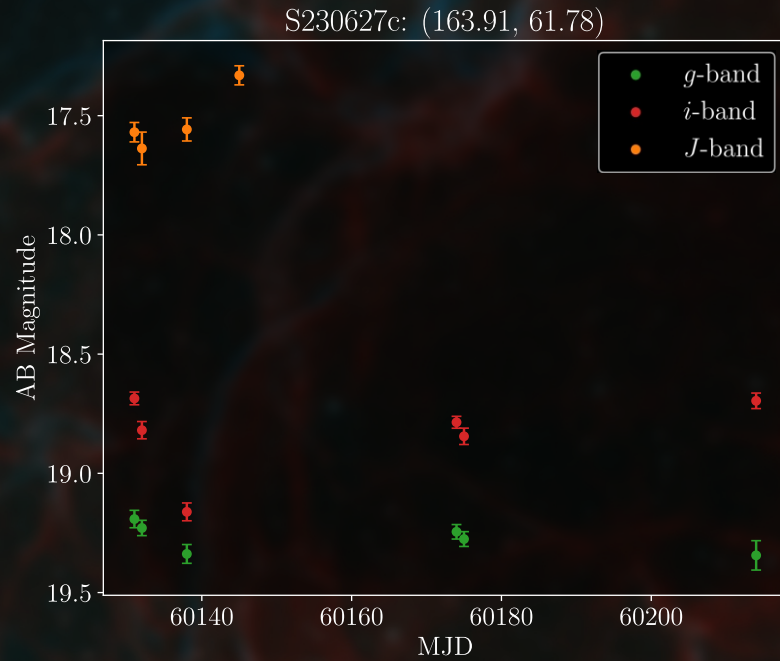
Skymap of S230627c



Follow-up observations conducted for 12 objects



No obvious candidate found





Summary

- Flares of BBH mergers might be possible to detect
- The detection depends on AGN orientation, disk properties and merger scenario
- Requirement: Bright flare & faint AGN

Future Work

- Work on target selection
- Improvement on observation methodology
- Development of a light curve model