

Black Holes or Neutron Stars?

Science Question: How can NuSTAR X-ray observations help us differentiate black holes and neutron stars in other galaxies?

Findings:

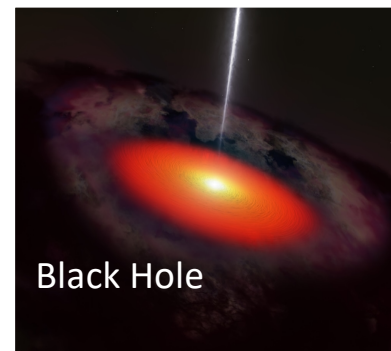
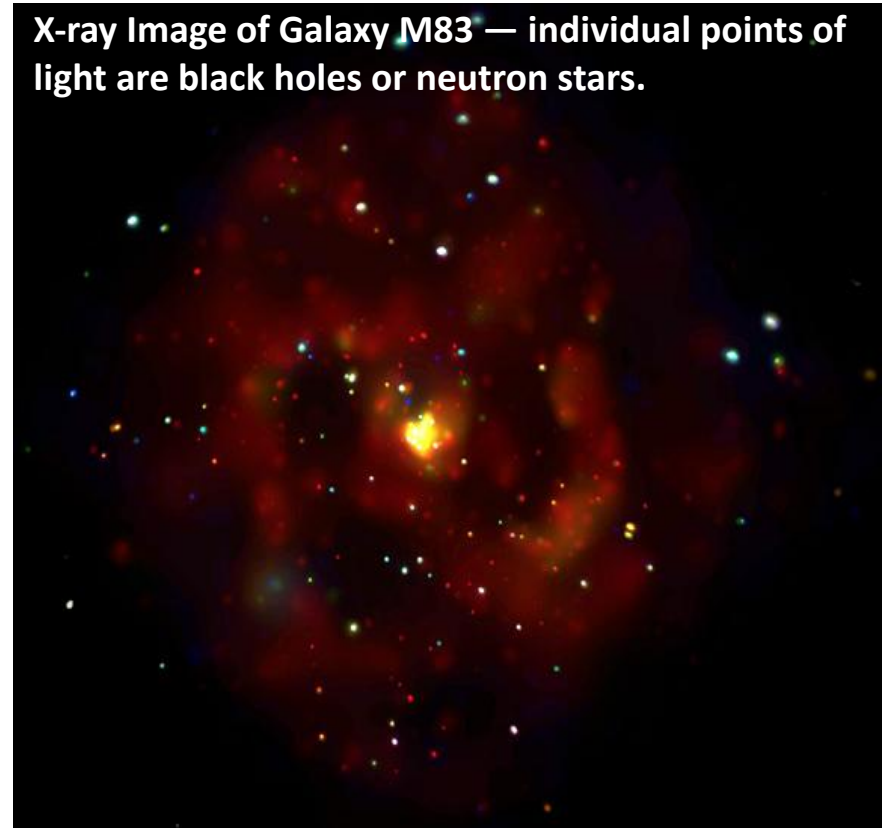
- We classified about 100 sources from 12 galaxies and found an equal number of black holes and neutron stars.
- Most neutron stars in the survey reach the maximum amount of energy they can theoretically emit.

Impact: A better grasp of the ratio of black holes to neutron stars will help scientists understand the outcome of supernova explosions and the sources of gravitational waves.

Why it Matters: Black holes and neutron stars are some of the most exotic and massive objects in the universe. By better understanding them, we better understand how the universe works.

Neven Vulic (662), Ann E. Hornschemeier (662), Dan R. Wik (662), Mihoko Yukita (662), Andrew F. Ptak (662), et al. 2018; "Black Holes and Neutron Stars in Nearby Galaxies: Insights from *NuSTAR*", *The Astrophysical Journal*, in press

X-ray Image of Galaxy M83 — individual points of light are black holes or neutron stars.



Black Hole



Neutron Star