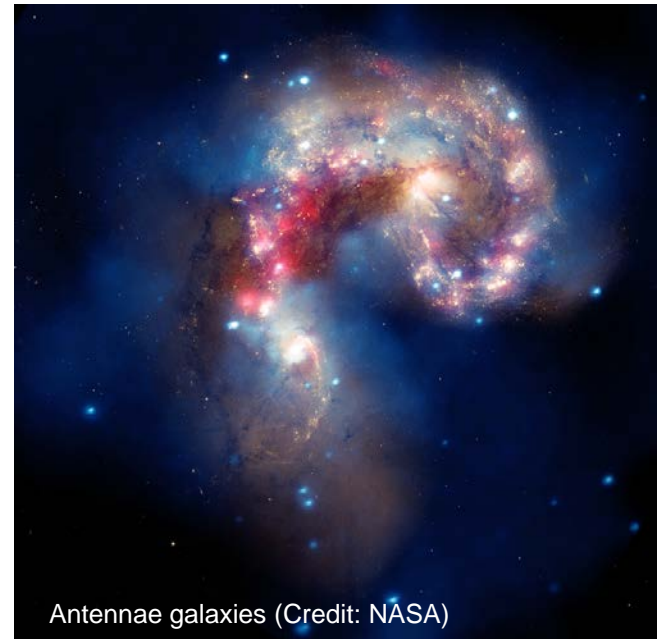


Hunting for Black Holes

Dr Sean Farrell
The University of Sydney



THE UNIVERSITY OF
SYDNEY



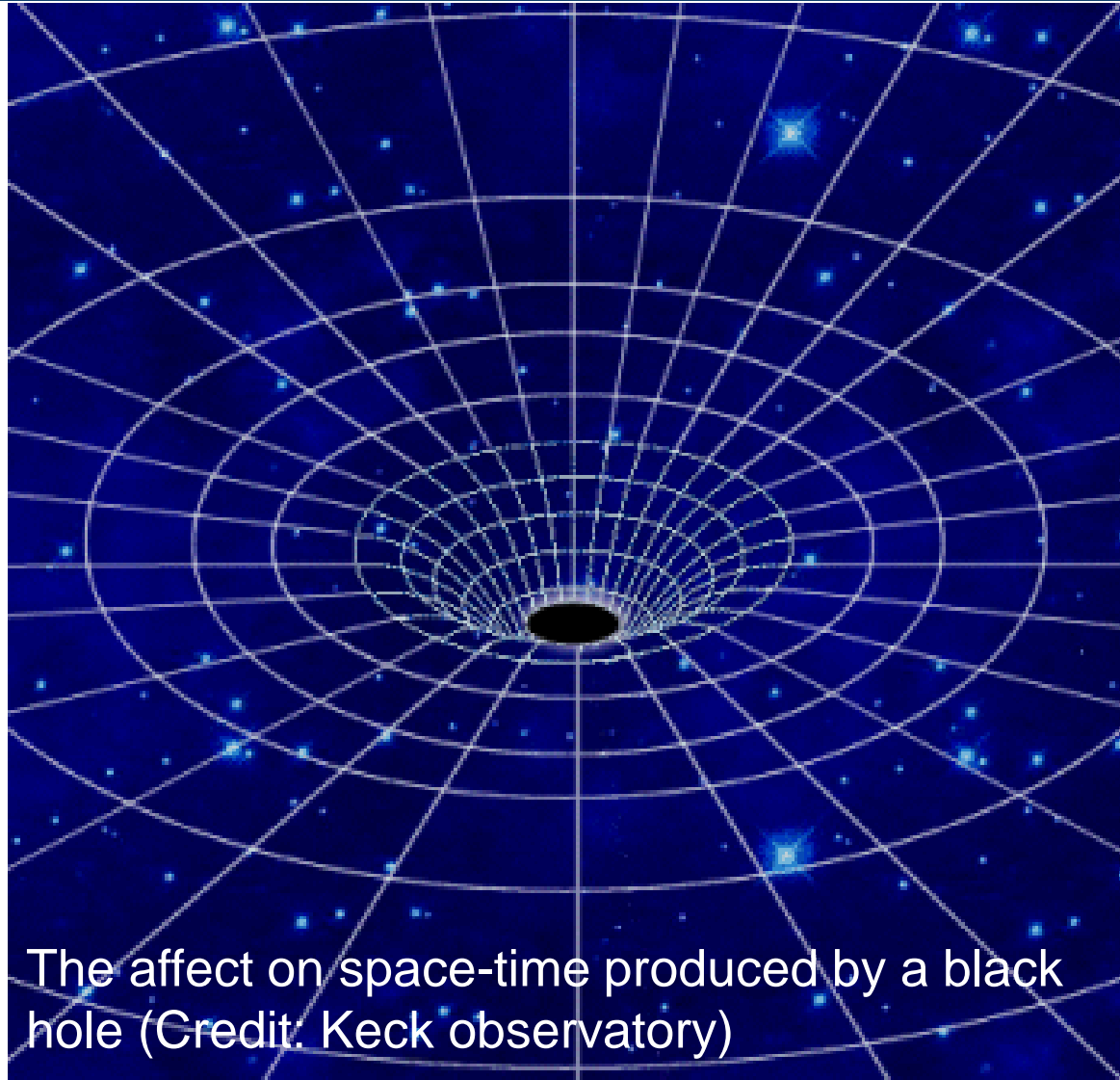


What Are Black Holes?

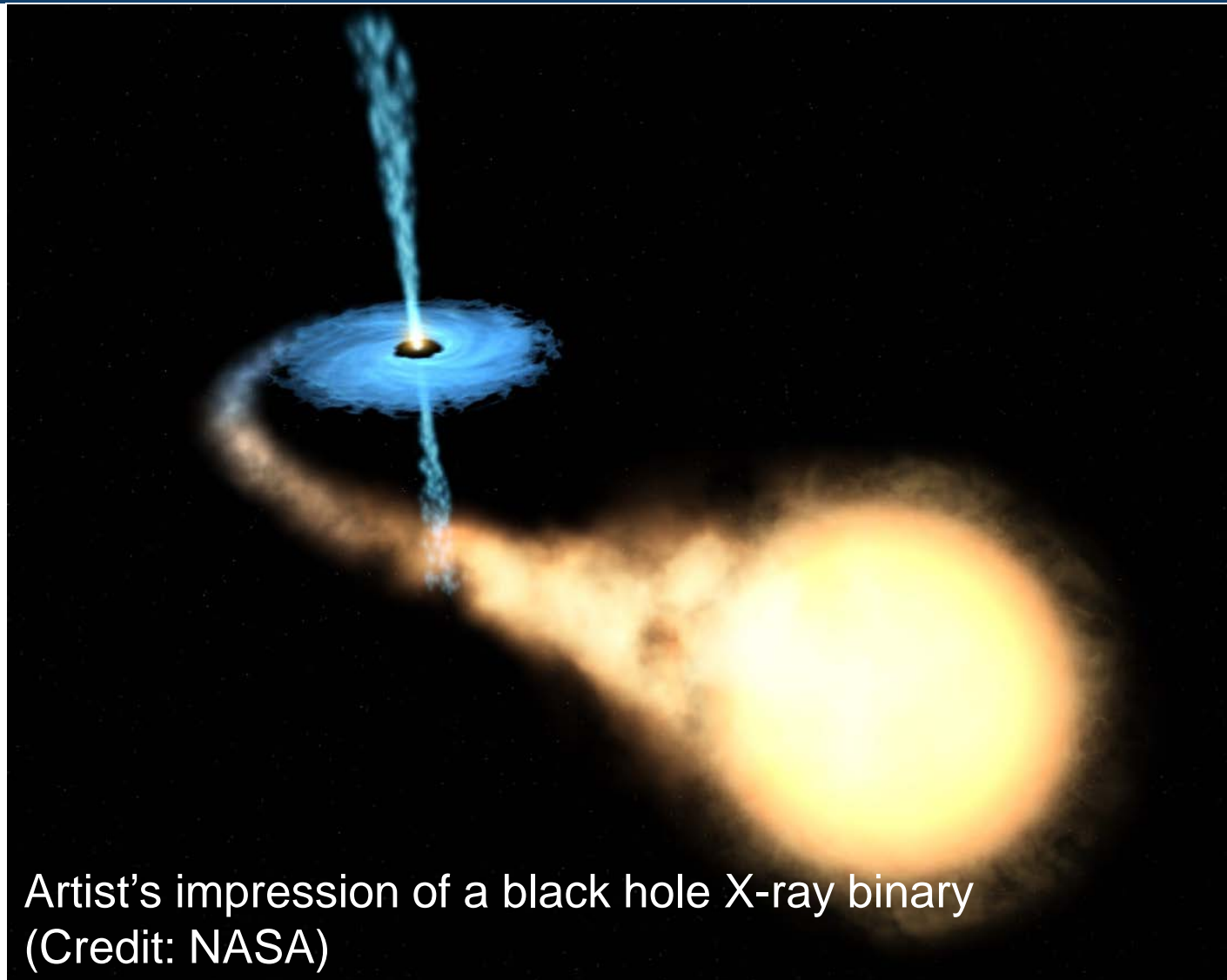


Artist's impression of a black hole (Credit: ESA/NASA)

What Are Black Holes?

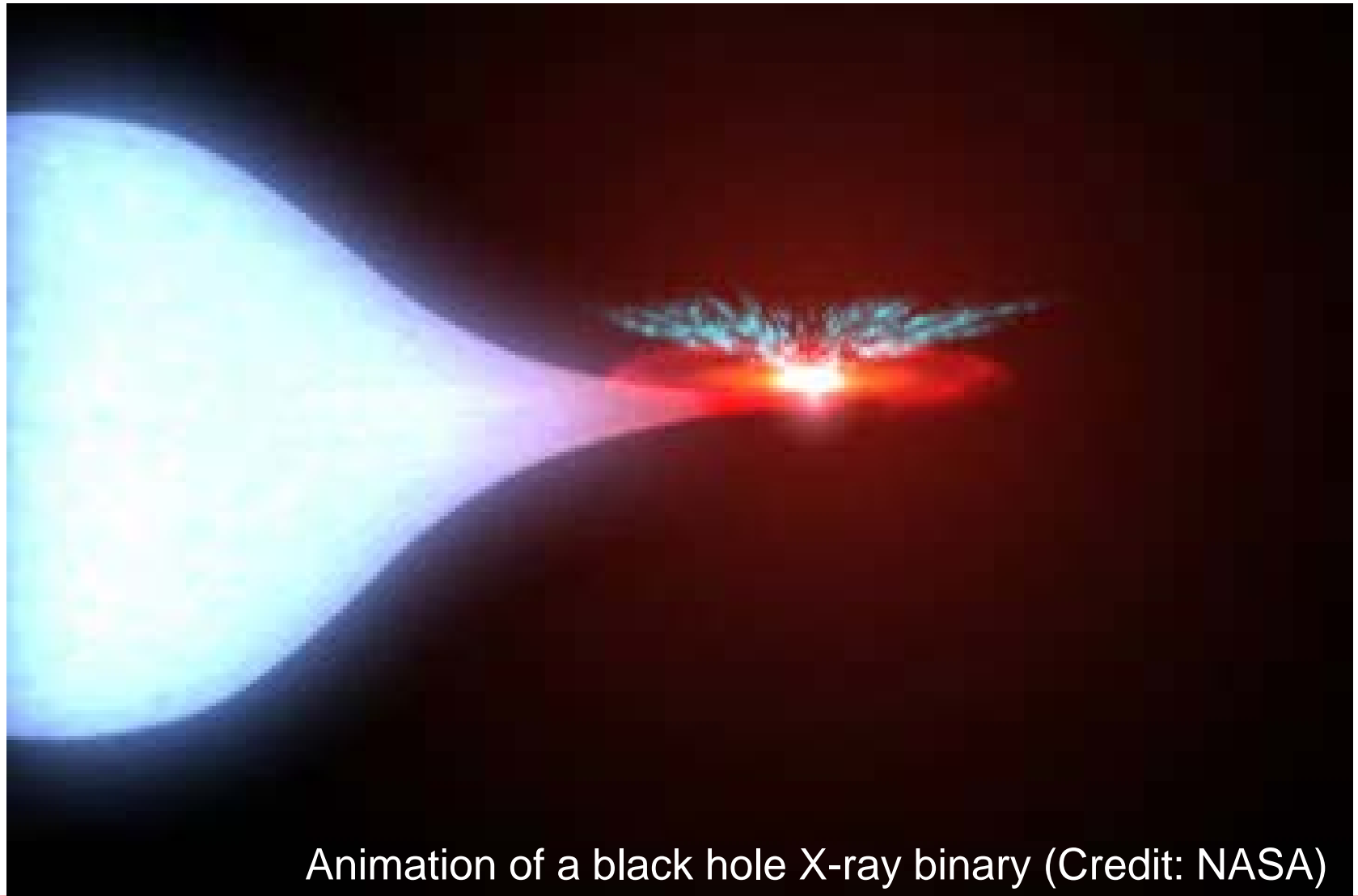


Types of Black Holes



Artist's impression of a black hole X-ray binary
(Credit: NASA)

Types of Black Holes





Types of Black Holes



The Sombrero galaxy

(Credit: NASA/STScI)

Types of Black Holes

Hubble image of the intermediate mass black hole HLX-1 in the galaxy ESO 243-49 (Credit: NASA/ESA/S. Farrell)



What about middle-weight black holes?

Black Hole Formation

Animation of a star going supernova (Credit: Hayden Planetarium)

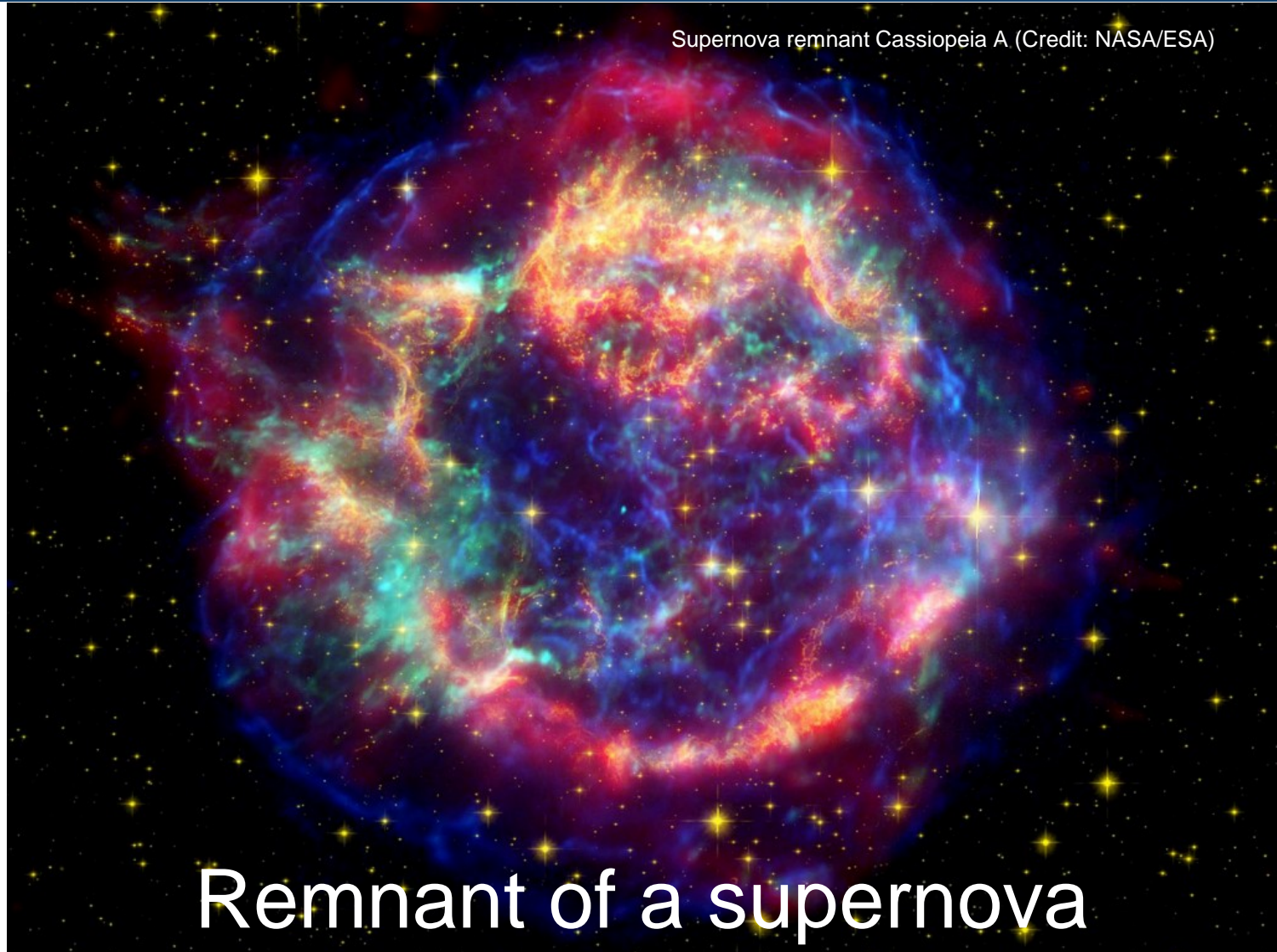
Supernova explosion

Supernova



Hubble image of a supernova (Credit: NASA/ESA/High-Z supernova team)

Black Hole Formation



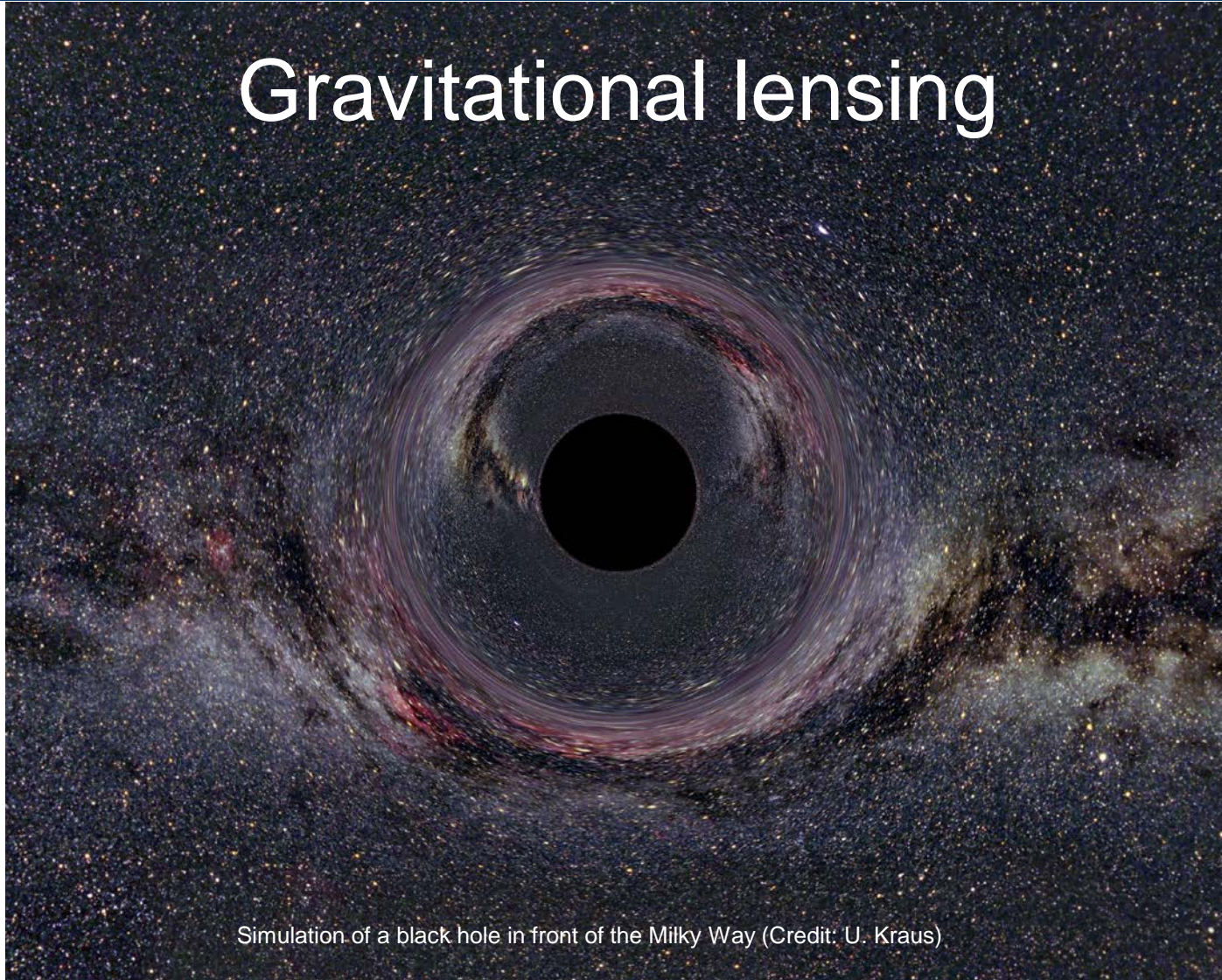
Black Hole Formation

The merging galaxies NGC 2207 and IC 2163 (Credit: ESO)



Merging galaxies

Gravitational lensing



Simulation of a black hole in front of the Milky Way (Credit: U. Kraus)

Finding Black Holes

Gravitational lensing of a distant galaxy by a galaxy cluster (Credit: NASA/ESA)

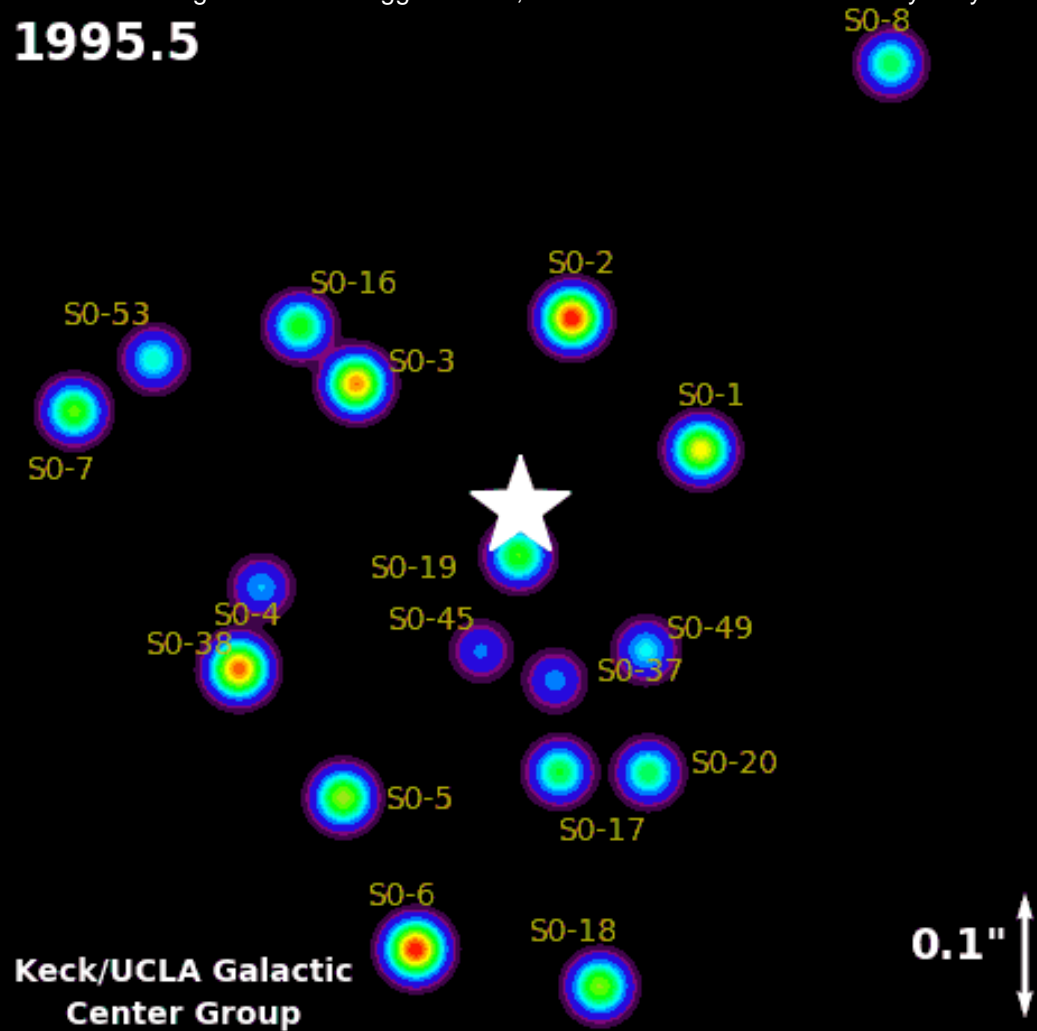


Gravitational lensing

Finding Black Holes

Stars moving around the Saggiarius A*, the central black hole in the Milky Way

1995.5



Keck/UCLA Galactic
Center Group

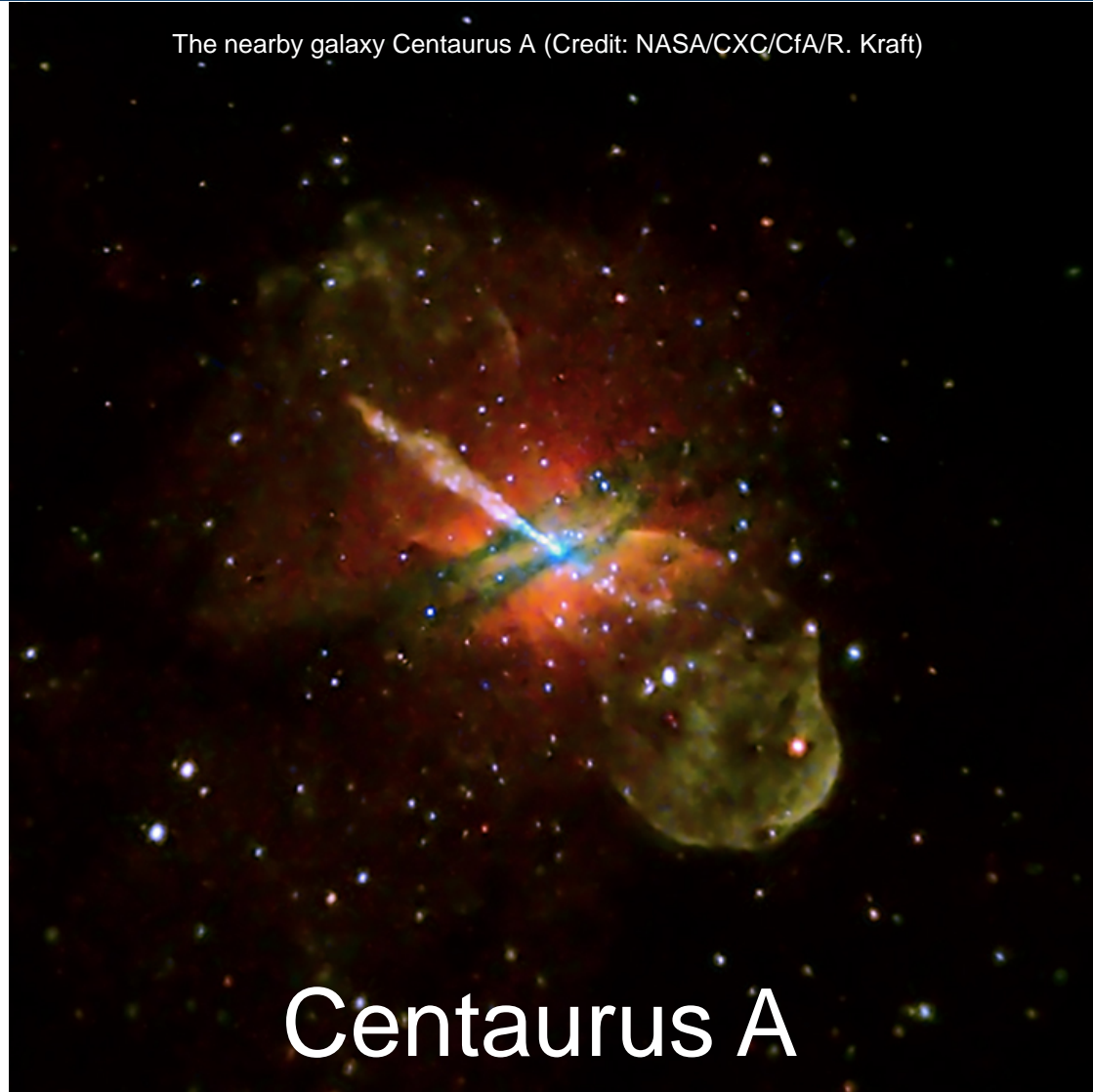
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Milky Way

www.eso.org/gigagalaxy

Finding Black Holes

The nearby galaxy Centaurus A (Credit: NASA/CXC/CfA/R. Kraft)



Centaurus A

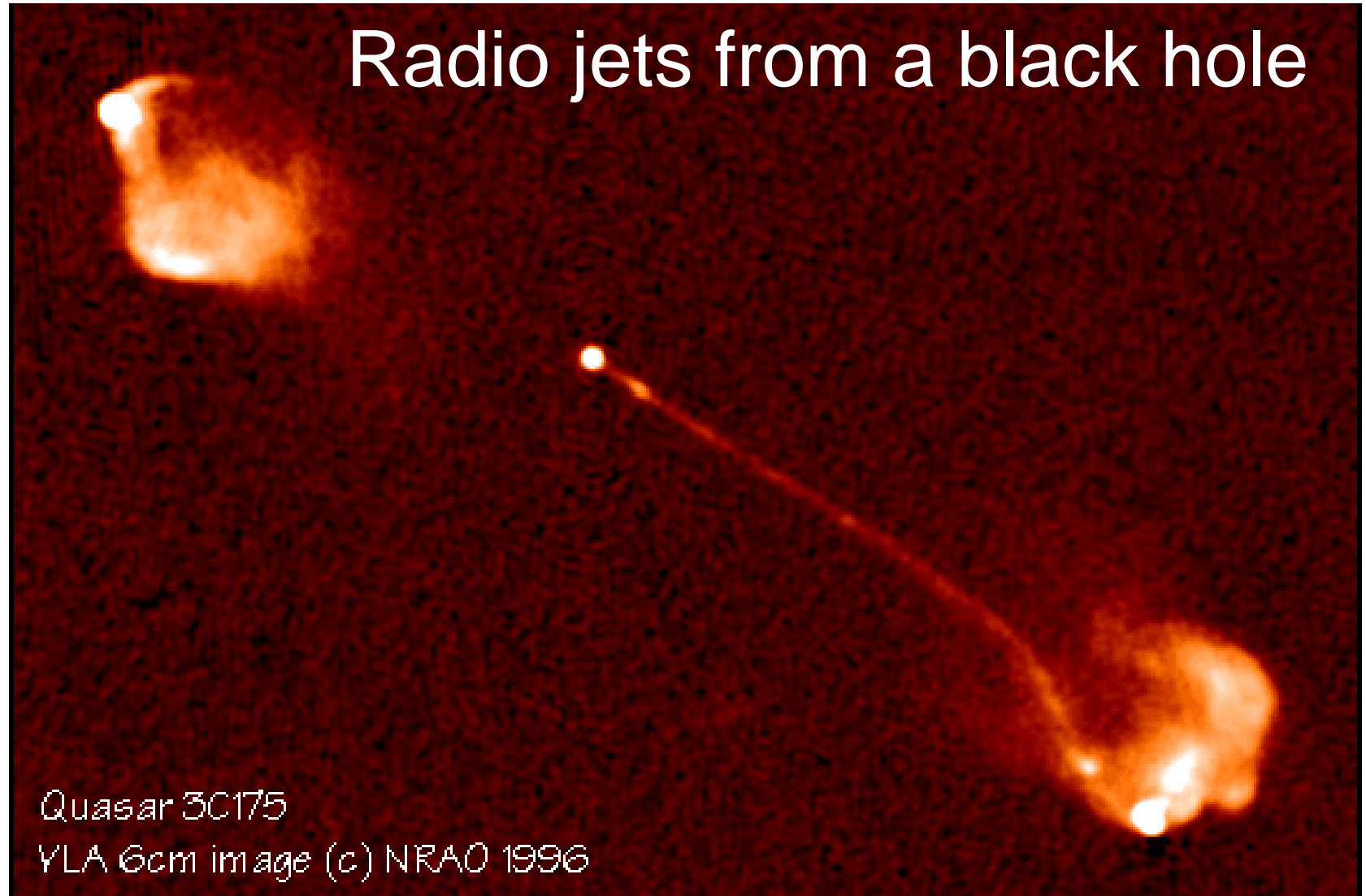
Finding Black Holes

Animation of a star being torn apart by a black hole (Credit: NASA/GSFC)



A star torn apart by a black hole

Radio jets from a black hole



SS433
VLBA



Amy Mioduszewski
Michael Rupen
Craig Walker
Greg Taylor

Radio jets from a black hole