October 6, 2010

Exam 2 back, Discovery Channel Program on Supernovas Friday. Wheeler in Edinburgh TX, Rio Grande Valley Science Association, talking to high school students, science teachers, public.

Reading Chapter 7 – SN 1987A

Astronomy in the News? Nobel Prize in Physics for discovery of graphene. Single atom layer thick hexagonal array of carbon atoms, conducts electricity like copper, conducts heat better than anything, superstrong, and transparent. Electrons move like massless waves (quantum effect) obeying laws of relativistic physics, enables relativistic experiments on a table top. Promise for applications in computers.

Pic of the Day – not green clouds, aurora in Alaska

Goal:

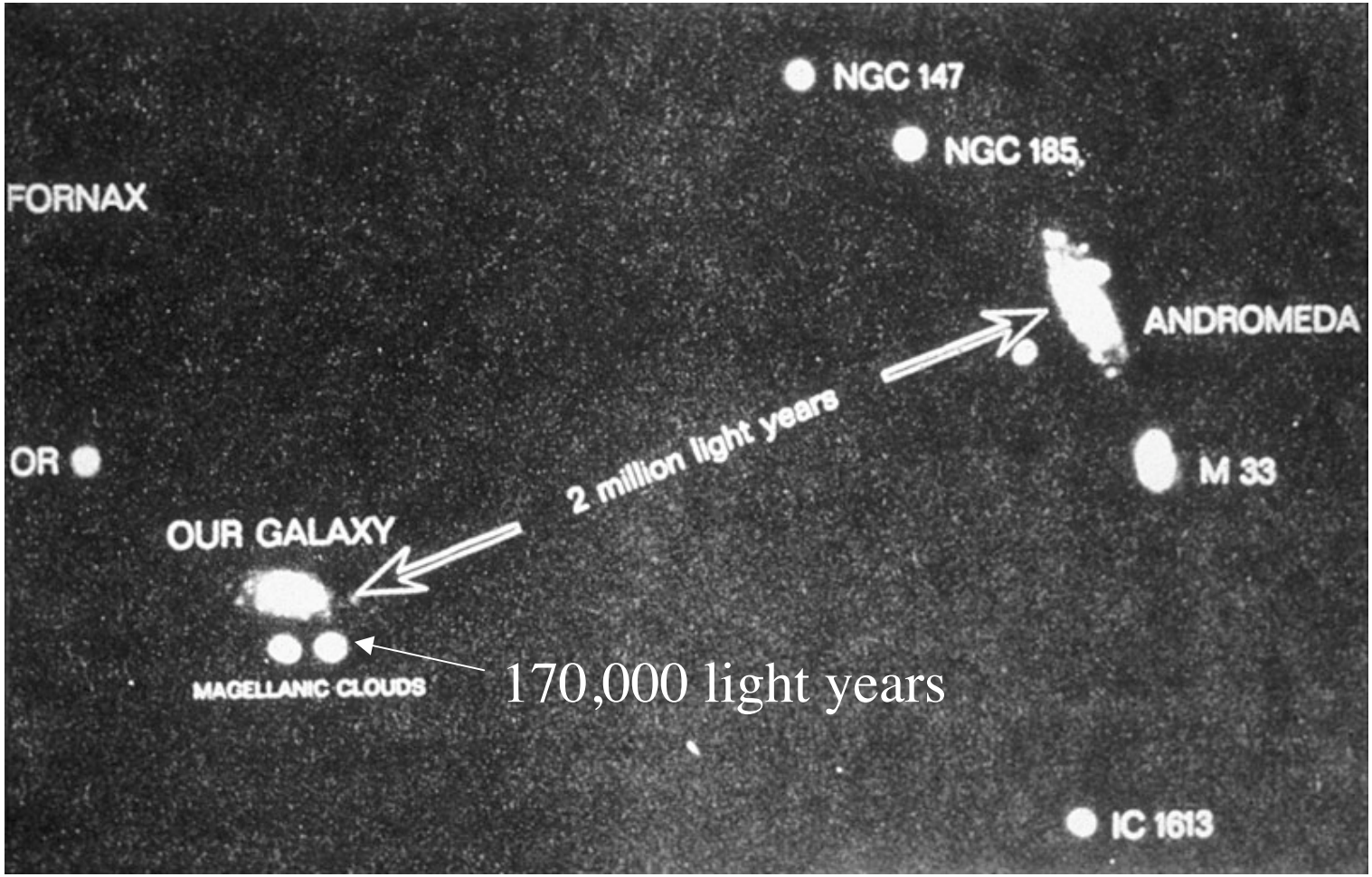
To understand the nature and importance of SN 1987A for our understanding of massive star evolution and iron core collapse.

Kepler

SN 1987A
first naked eye
supernova since
Kepler's in
1604

Tycho

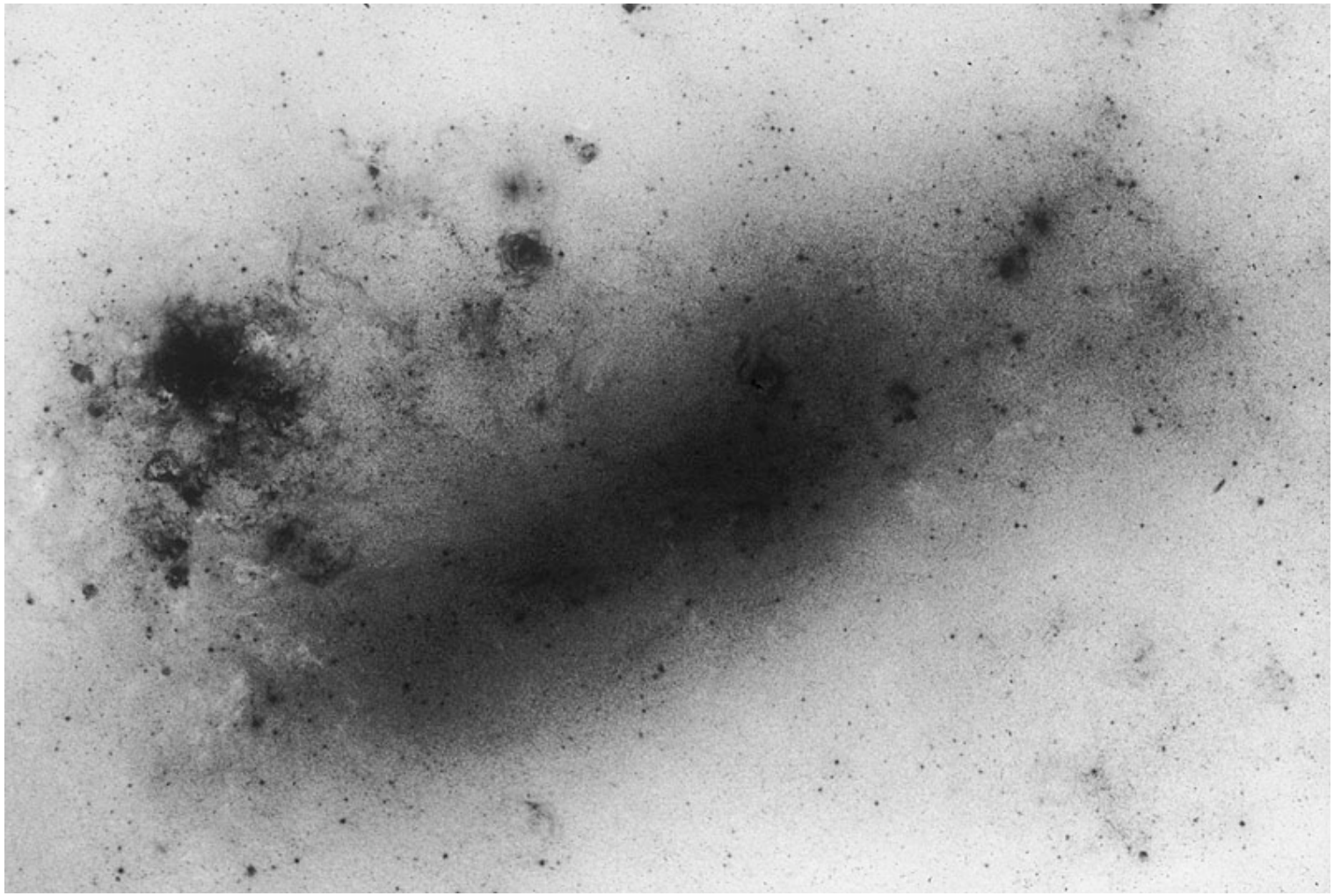
Local group


NGC 147
NGC 185
FORNAX
ANDROMEDA
2 million light years
OR
M 33
OUR GALAXY
MAGELLANIC CLOUDS
170,000 light years
IC 1613

Large Magellanic Cloud, irregular galaxy (color)

Large Magellanic Cloud, larger scale

LMC negative



Rob McNaught patrol photos - the day before

2-22-87

The first known photo of SN 1987A hours after shock breakout

2-23-87

One day later

2-24-87

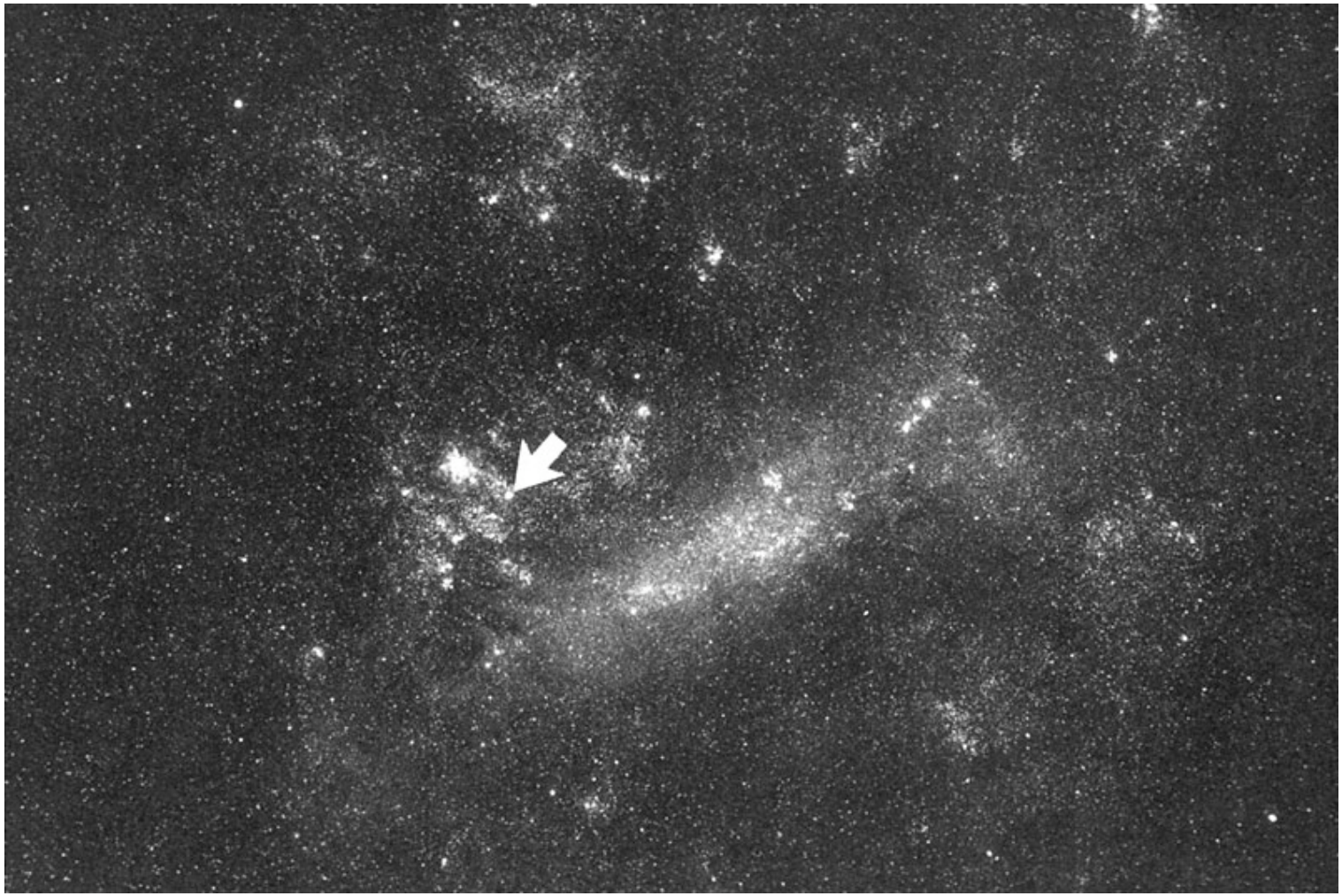
Near maximum light

5-20-87

About when I saw it

8-23-87

LMC w/arrow



One Minute Exam

When SN 1987A exploded, where would have been a good place to have seen it with your naked eye?

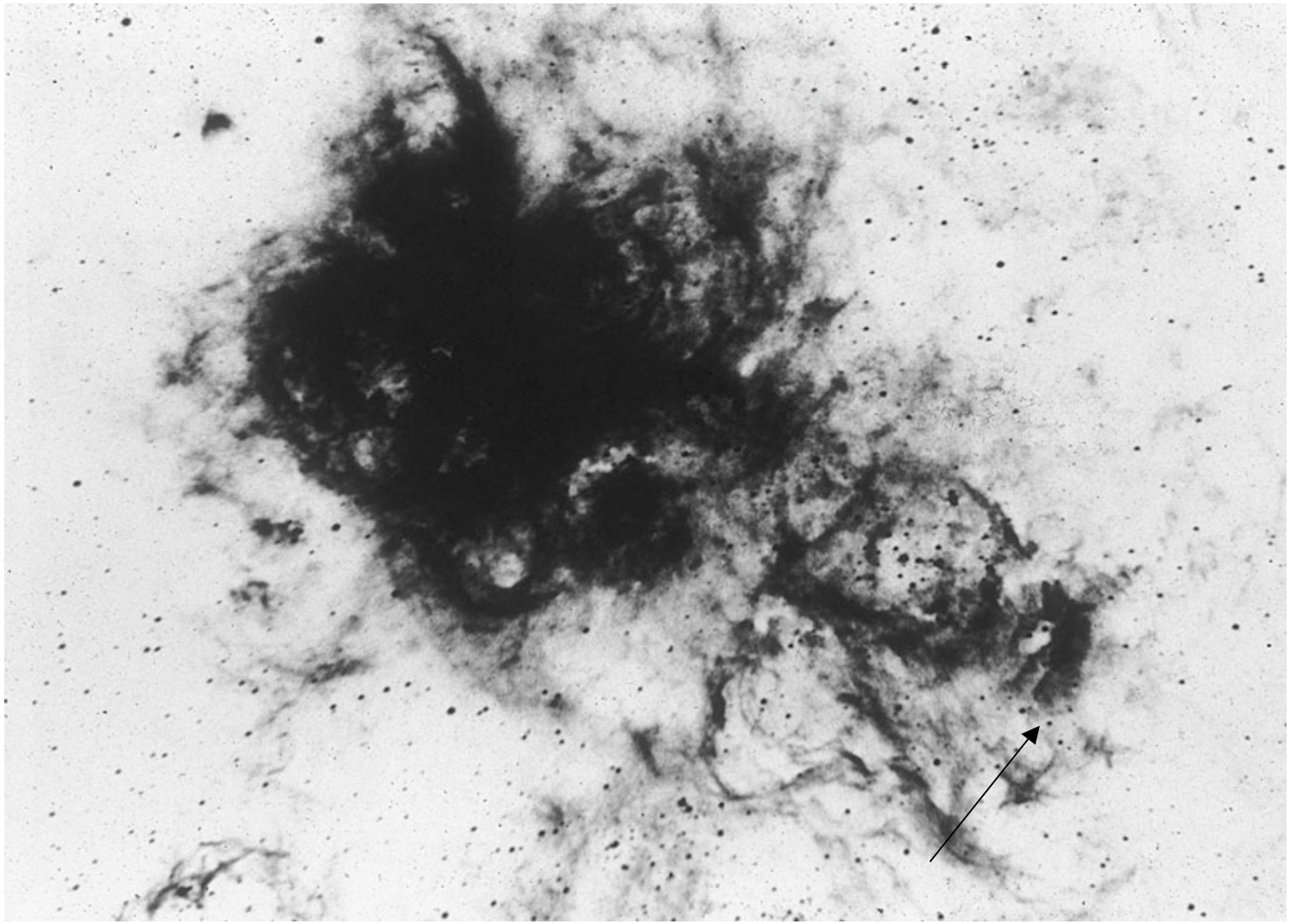
 Texas

 Japan

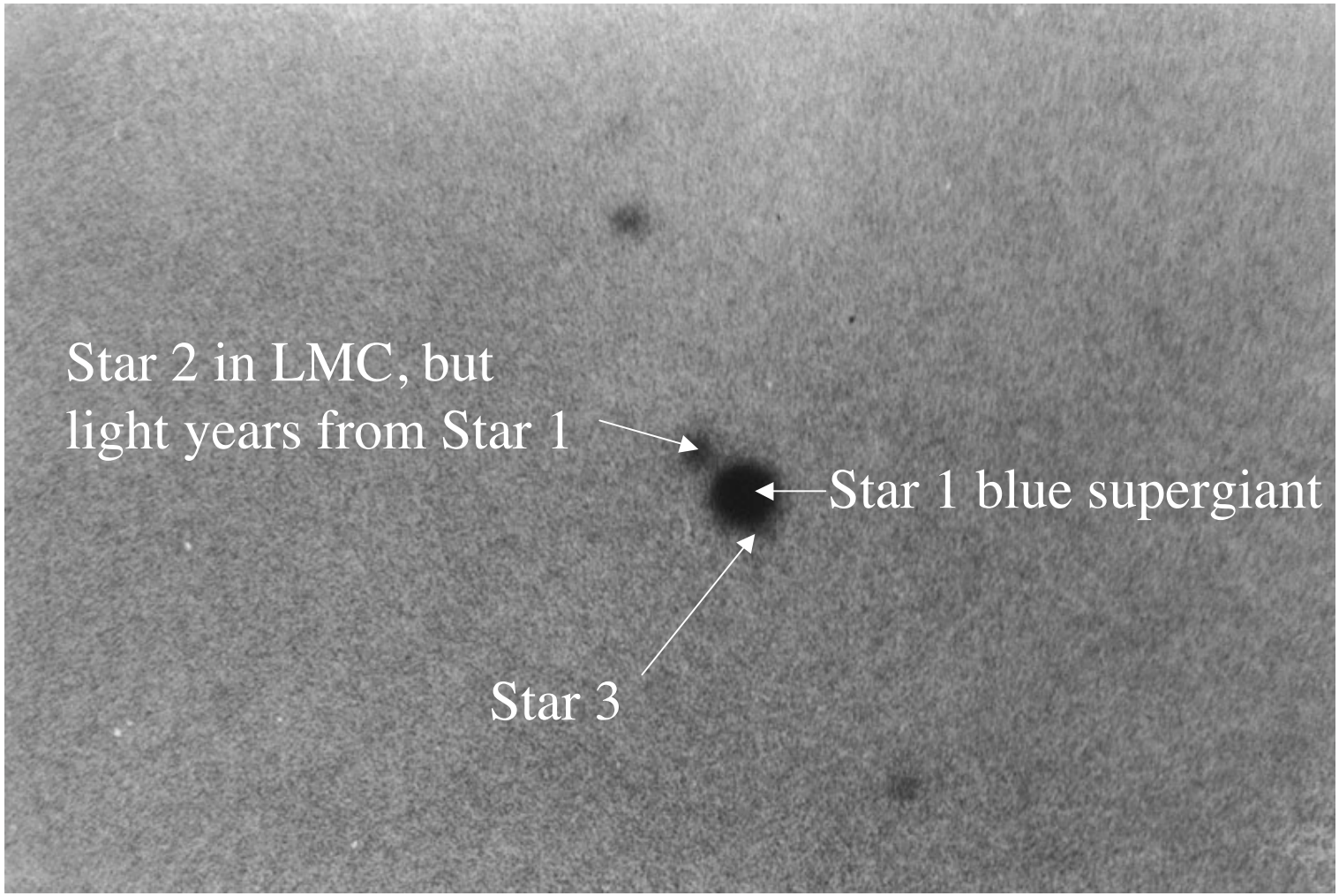
 Russia

 Argentina

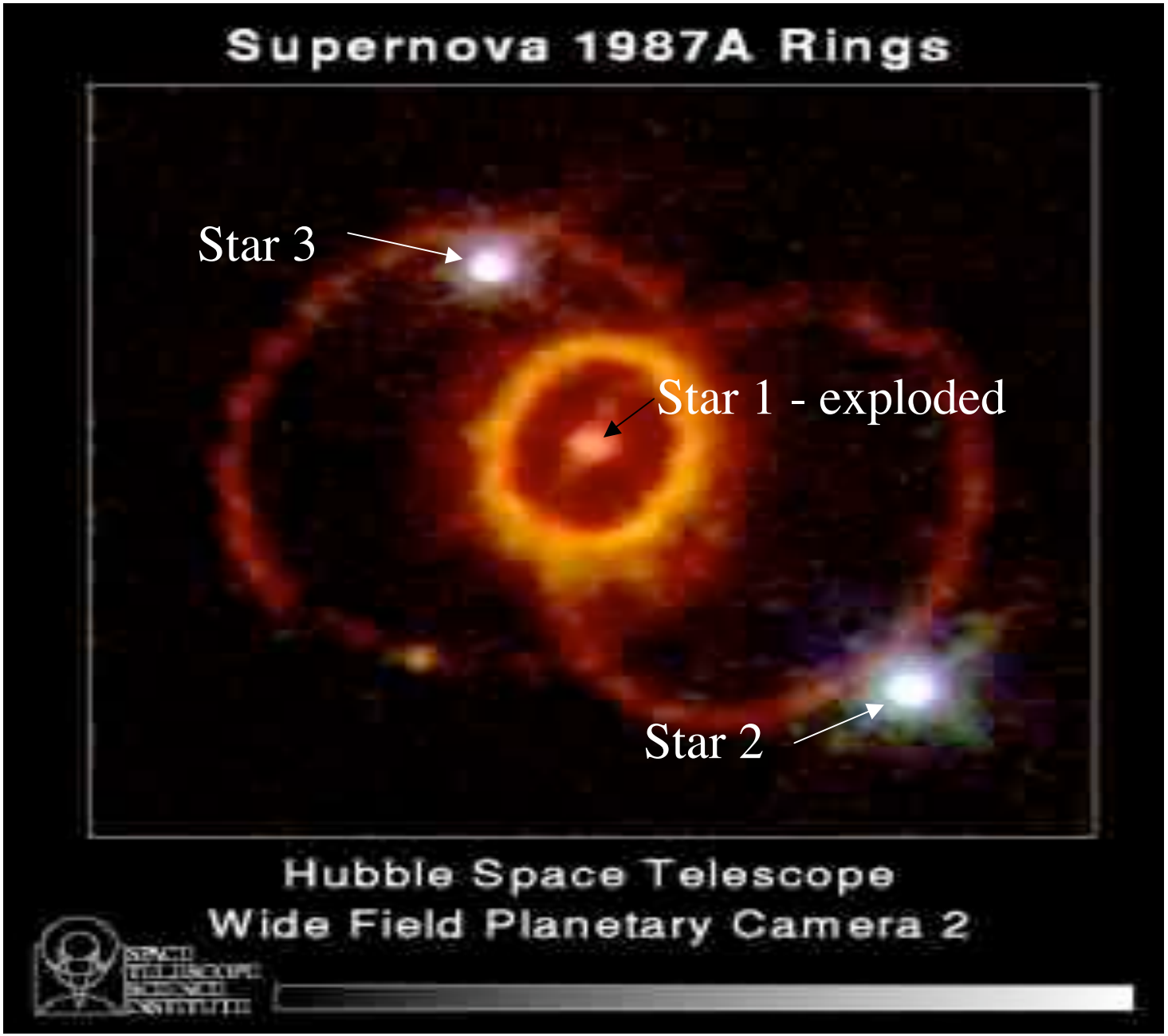
Photo of progenitor star (giraffe)

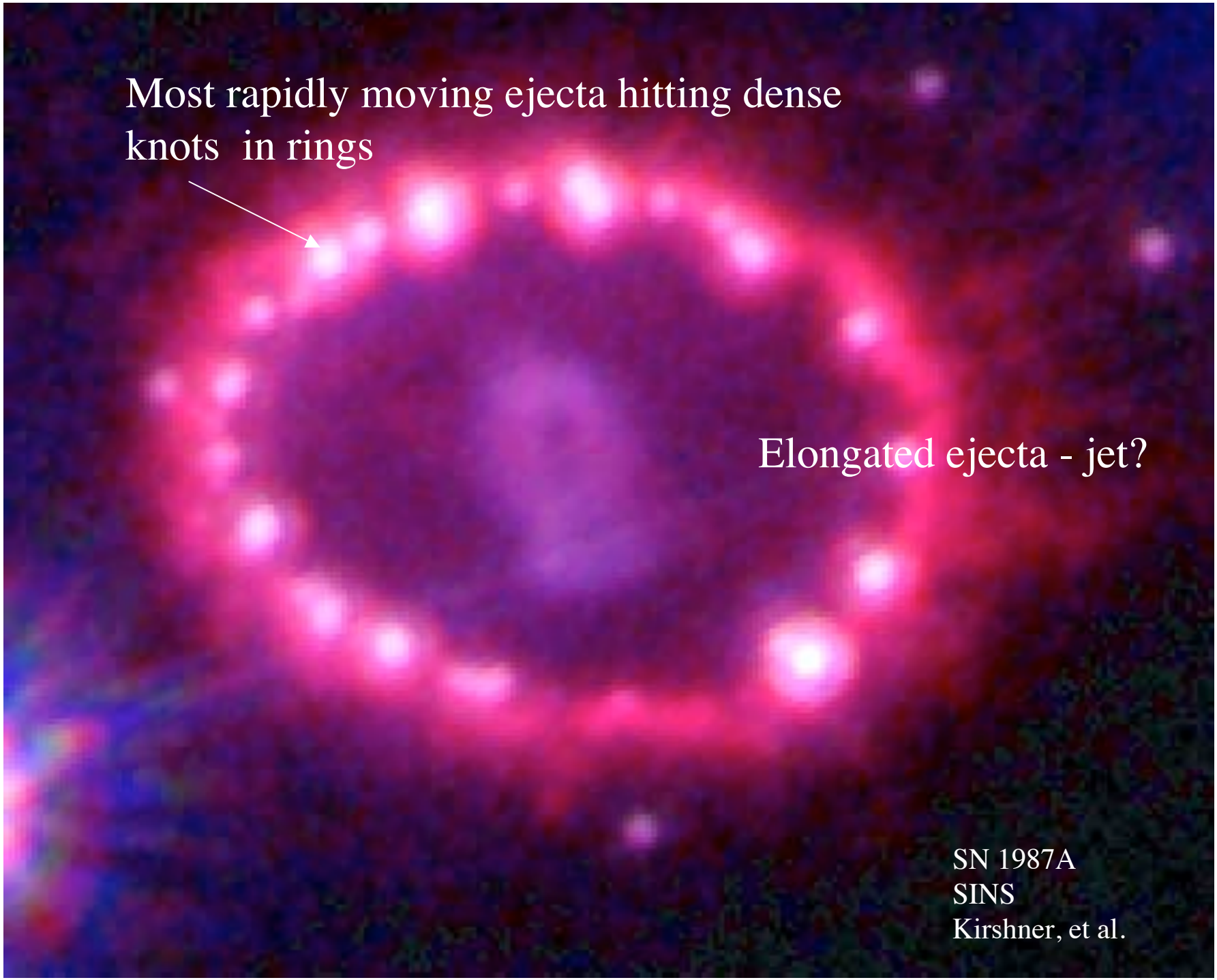


Stars 1, 2, 3

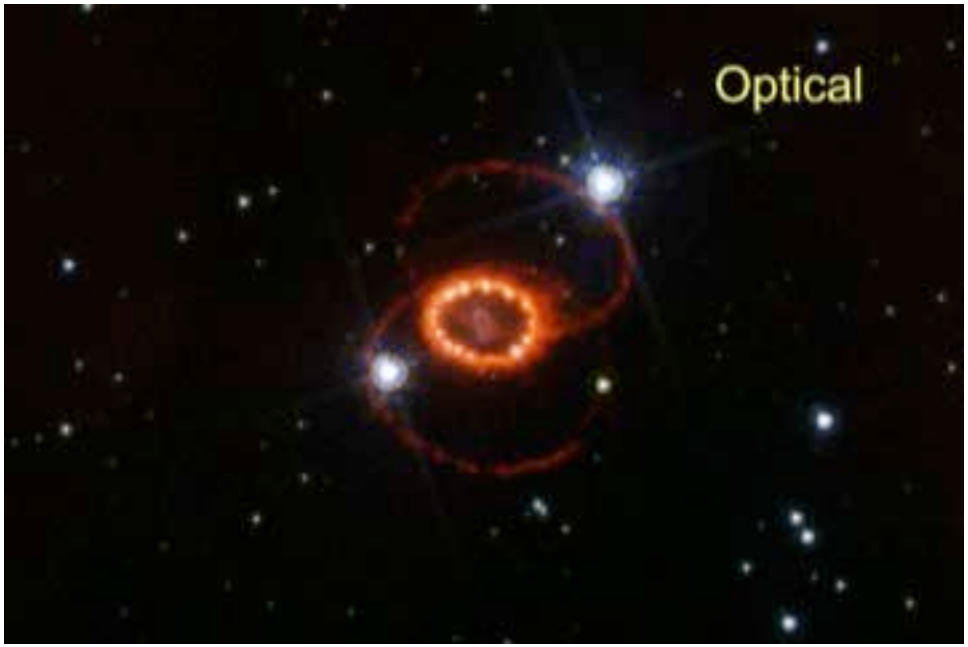


Close-up

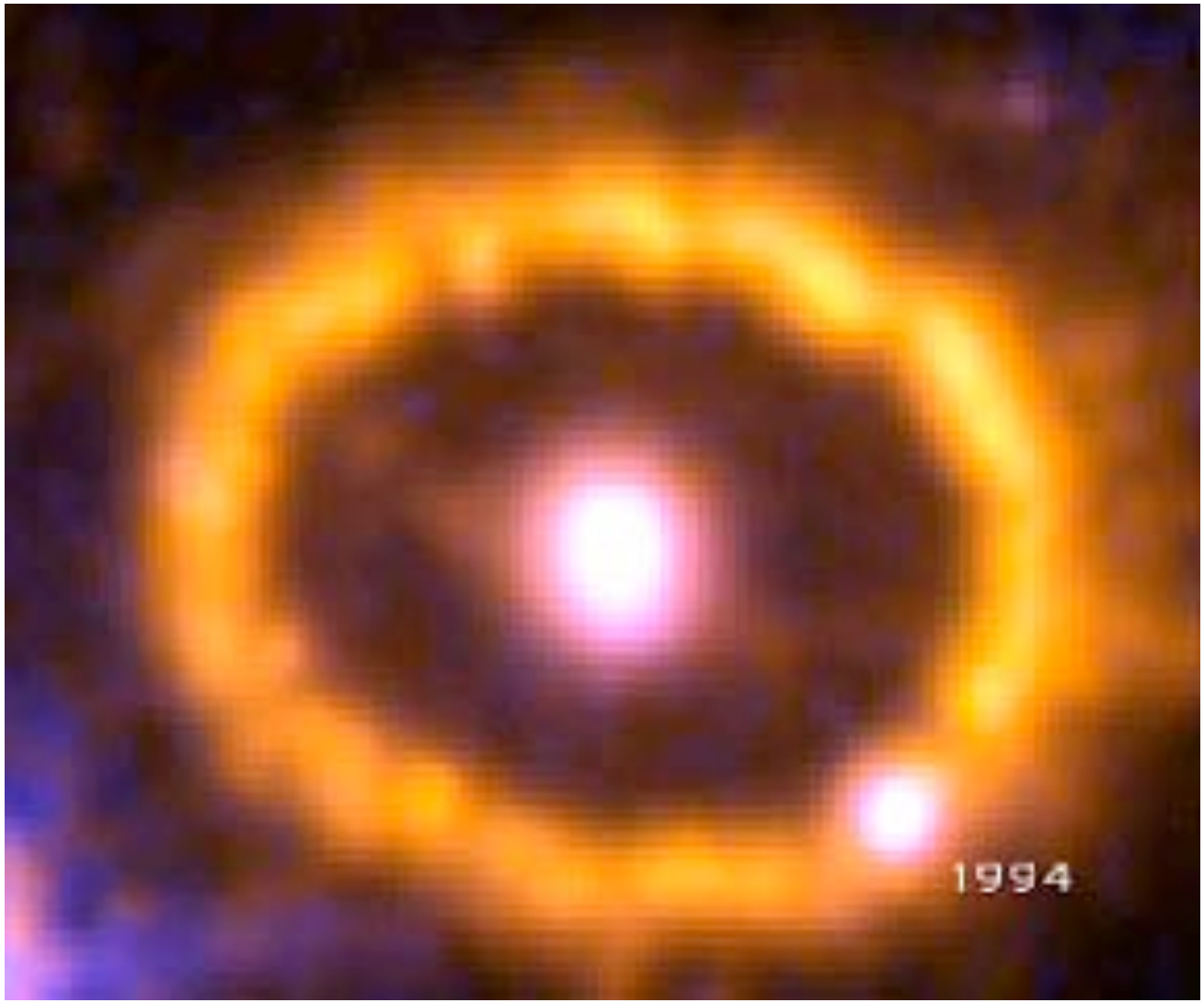

Supernova 1987A Rings
Star 3
Star 1 - exploded
Star 2
Hubble Space Telescope
Wide Field Planetary Camera 2


Most rapidly moving ejecta hitting dense knots in rings
Elongated ejecta - jet?
SN 1987A
SINS
Kirshner, et al.


1994


Optical

Movie of Hubble data 1994 - 2006



Updated to 2010