



lina and Arttu  
Supernova

# What is supernova?

- According to NASA, supernova is the largest explosion that takes place in space.
- Supernova can happen two ways; either several times more massive star than the sun runs out of nuclear fuel and collapses under its own gravity or when a white dwarf receives matter from another star until it collapses.





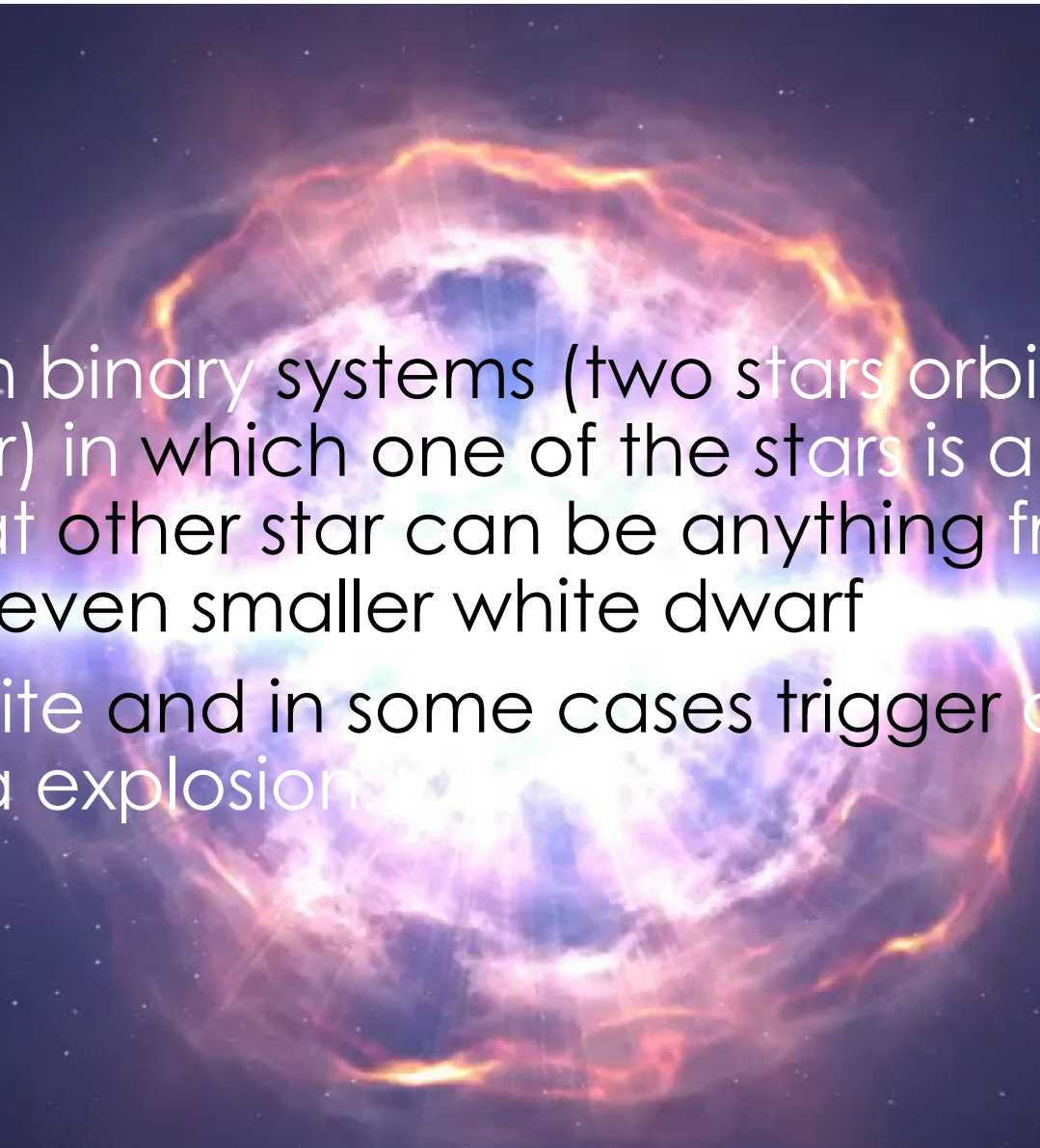
# Types of supernovas

- Type Ia
- Type Ib
- Type Ic
- Type II:
- Type II-P
- Type II-L



# Type Ia

- It occurs in binary systems (two stars orbiting each other) in which one of the stars is a white dwarf. That other star can be anything from giant star to an even smaller white dwarf
- They reignite and in some cases trigger a supernova explosion





# Type II

- At least 10 times bigger star than our sun will eventually run out of hydrogen and helium fuel and the core will turn into iron and the fusion reaction will stop.
- The star's core will turn into a neutron star or a black hole and the rest of the star will blow intensely outwards.

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- It's the most powerful supernova ever discovered
- In a galaxy billions of light-years away that exploded with such force it briefly shone nearly 600 billion times brighter than our Sun
- The explosion released 10 times more energy than the Sun will radiate in 10 billion years
- If it were as close as Pluto, it would vaporize the Earth and all the other worlds in our solar system.



# Neutron stars and black holes

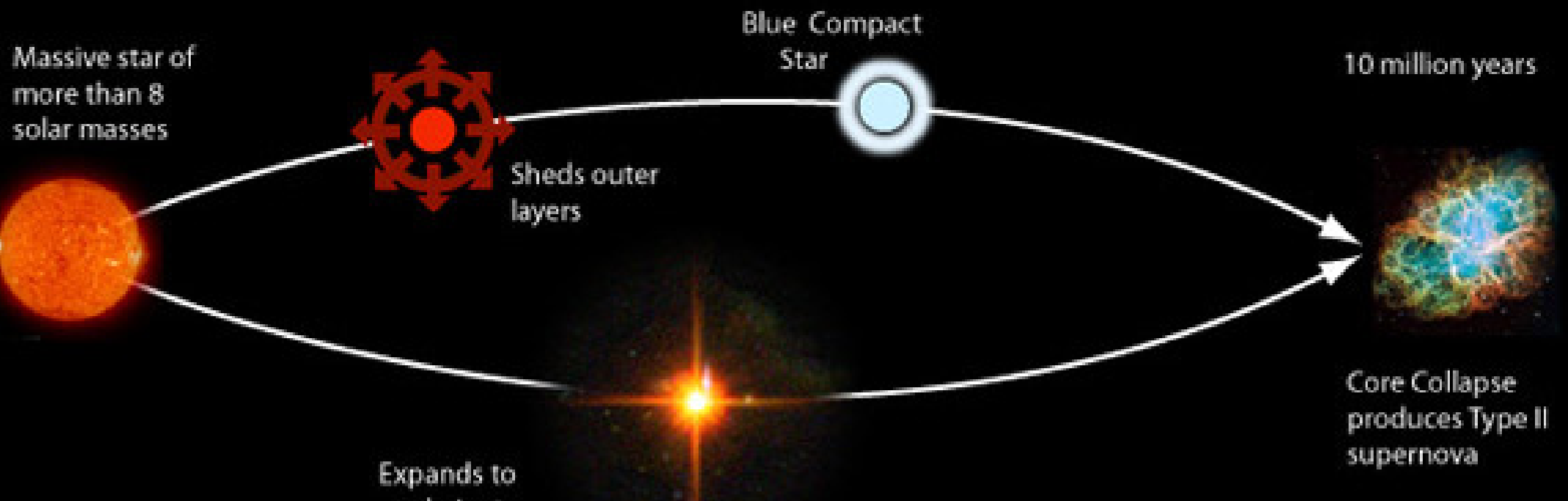
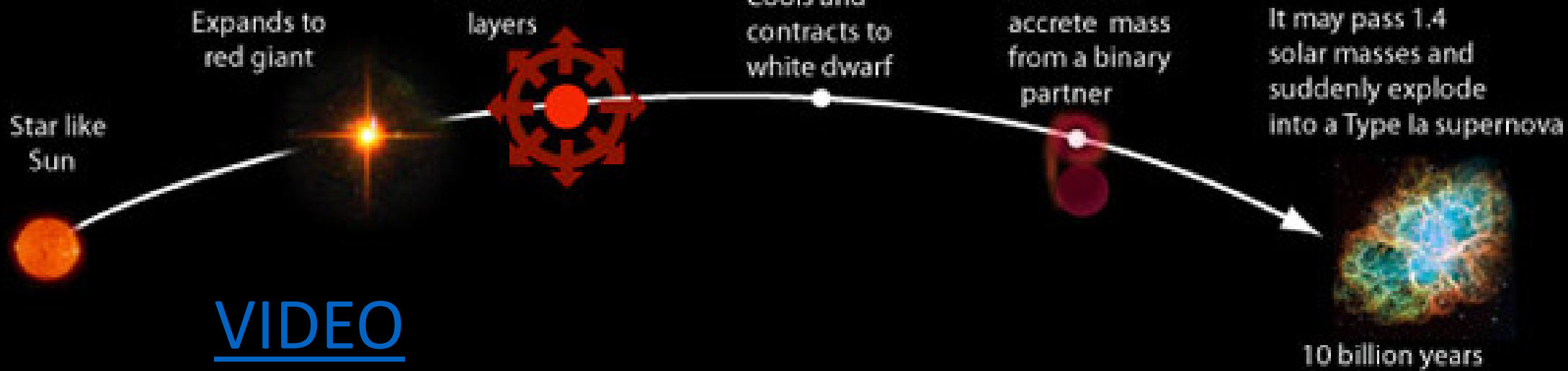
- A neutron star is the collapsed core of a large star which before collapse had a total of between 10 and 29 solar masses.
- Neutron stars are the smallest and densest stars. They are so dense that a single teaspoon would weigh a billion tons.
- A black hole is a place in space where gravity pulls so much that even light can not get out.
- The gravity is so strong because matter has been squeezed into a tiny space. This can happen when a star is dying.
- Black holes and neutron stars are outcomes of supernovas.

# Before and after photo of supernova

- On the left of the photo is Supernova 1987A after the star has exploded.
- On the right of the photo is the star before it exploded.







# sources

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