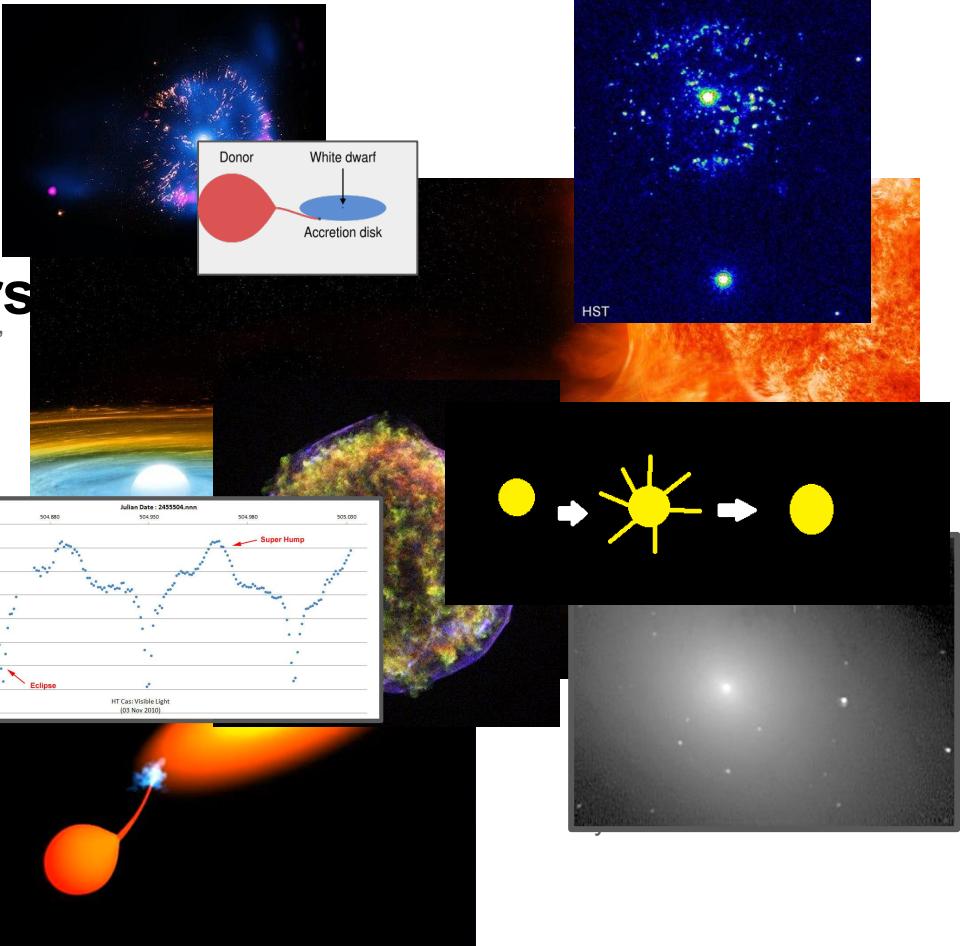


Cataclysmic variable stars

or 'this cool space thing I found on the internet'

or 'irregular brightness twin stars and novae'

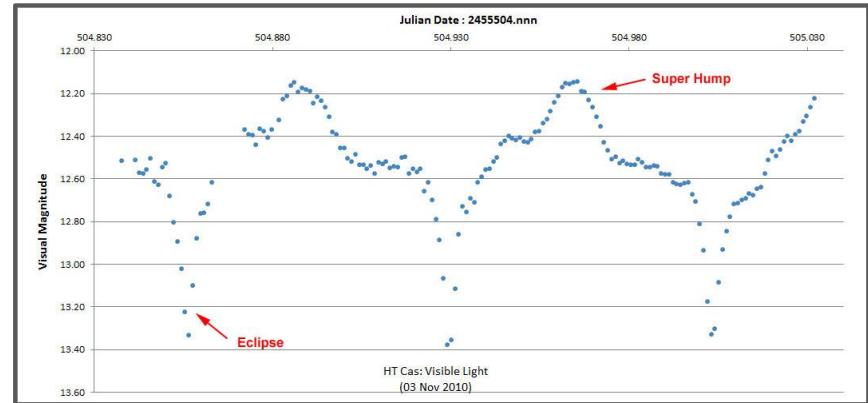
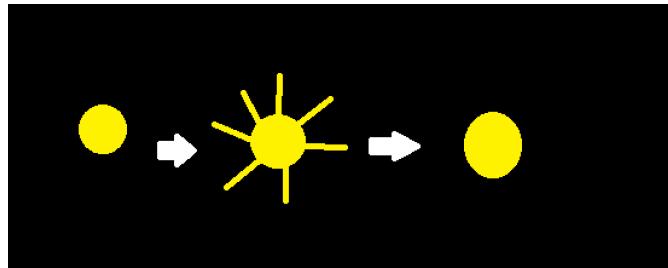
or 'I did this in like 10 minutes last night'



What is a cataclysmic variable star?

Also known as dwarf novae, they are stars that irregularly increase in brightness by a large factor, then drop back down to a quiescent (normal, quiet) state

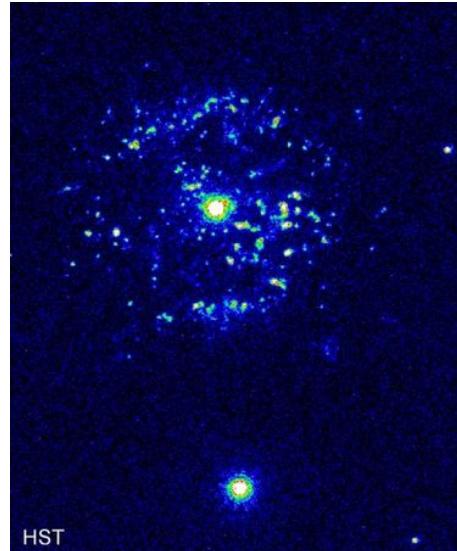
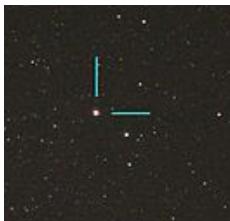
BUT WHY?!?!?!



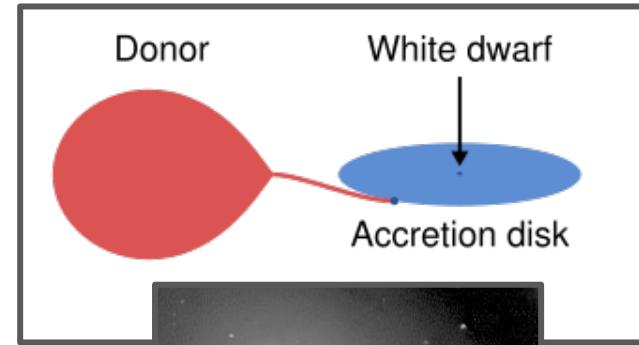
It's called a superhump btw

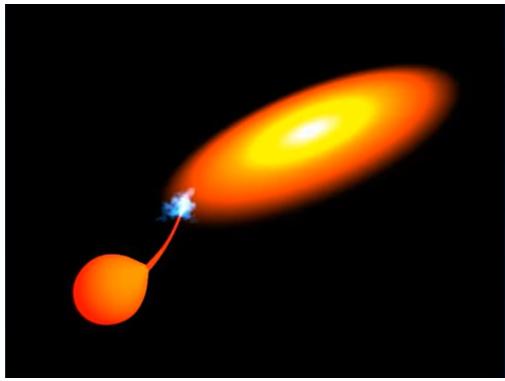
Binary stars with two components

A mass-transferring ‘donor’ star and a white dwarf primary orbit each other. They are so close the that gravity distorts the other star and the white dwarf accretes (acquires, steals) matter from it. The infalling (falling in) matter forms a accretion disk which produces x-rays due to the enormous amount of gravitational potential energy.



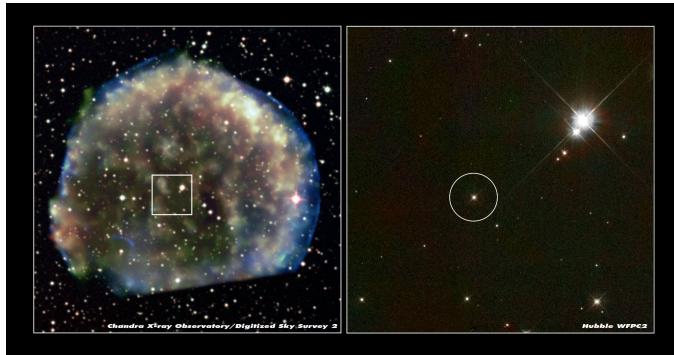
The hydrogen from the donor star can cause runaway fusion in the white dwarf and material is ejected in a novea.



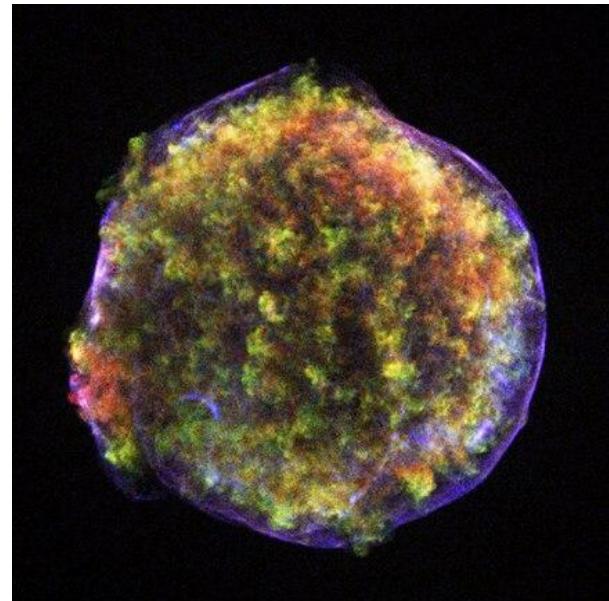


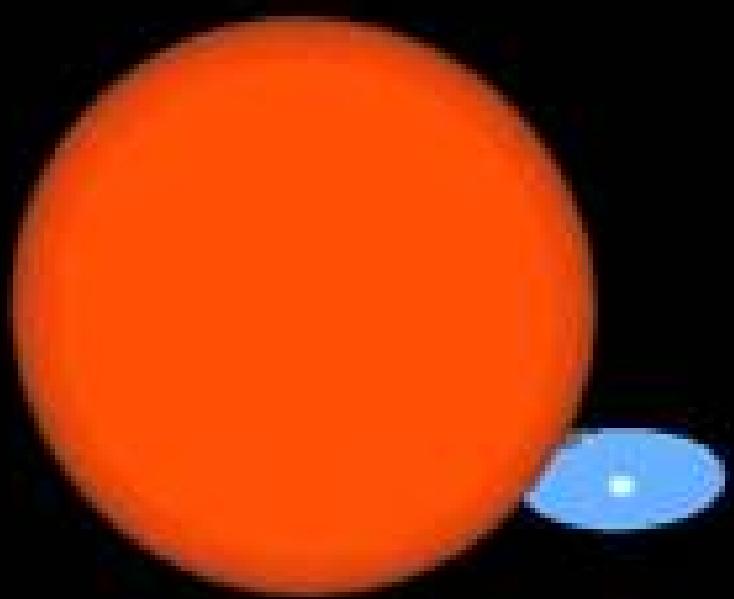
In some periodic brightening can be caused by deformations of the accretion disk when its rotation is in resonance with the orbital period of the binary. When a critical temperature is reached the viscosity of the accretion disk changes and more mass flows through it, increasing the temperature. This leads to brightening of the star system.

This sometimes causes a type 1a supernovae - Tycho's supernova is thought to have been caused by a cataclysmic variable system.



Tycho G companion star





THE END