Astronomy in the news - ULITS 10 F-16's were in the area? New video.

Weather?

Rainbow

Pic of the Day: Pic du Midi in the Pyrenees.





Basic Disk Dynamics - Figure 4.1



Basic Disk Dynamics

Orbits closer to the center are faster.

This creates rubbing and friction and heat, everywhere in the disk.

Friction tries to slow the orbiting matter, but it falls *inward* and ends up moving *faster*.

(Just as removing heat from a normal star causes it to get hotter) Slow settling inward by friction -- *accretion*

Friction also causes *heat*.

Hotter on inside, cooler on outside



One Minute Exam:

In an accretion disk, friction causes moving matter to

A Slow down

B Speed up

D Move outward

C Pass from one Roche lobe to another

Cataclysmic Variables

Second stage of mass transfer General Category "Novae" "New" stars flare up, see where none had been seen before.

All CVs share same general features: *transferring star*, *transfer stream*, *hot spot*, *accretion disk*, and *white dwarf*.



Cataclysmic Variables

Dwarf Nova - flare × 10 brighter intervals of weeks to months last days to weeks

Recurrent Nova - flare × 1000 brighter every 10-100 years last weeks to months

Classical Nova - 10⁴ to 10⁵ times brighter never observed to recur -- suspect 10⁴ years last months to years

Supernova - (one type might originate in a cataclysmic variable) flare once 10^{10} × brighter (10 billion times) last months to years

Dwarf Nova

Activity in the *accretion disk*, not transferring star or central star.

Mechanism - store and flush, works when the transfer rate is low.

Disk is first cool, semi-transparent, heat radiates away
little accretion, input more than accretion, matter accumulates in STORAGE STATE
Disk gets denser, opaque, traps heat. hotter disk generates *more friction and heat*

⇒*Run away to bright, hot disk* HOT, BRIGHT, FLUSHING STATE

More rapid flow through disk, faster than input ⇒ disk thins out, turns semi-transparent, cools, returns to STORAGE STATE REPEAT



Demonstration of Dwarf Nova Accretion Disk Instability

Need a volunteer