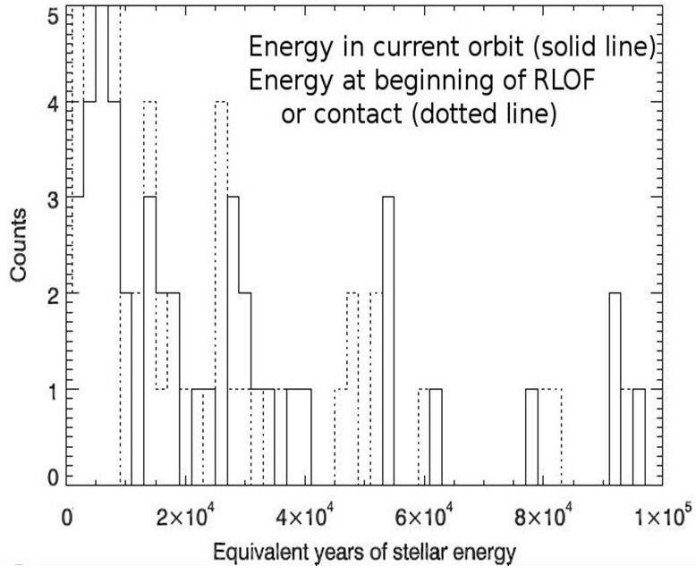
# Observability of Planet Destruction: Fast Bangs or Slow Whimpers?

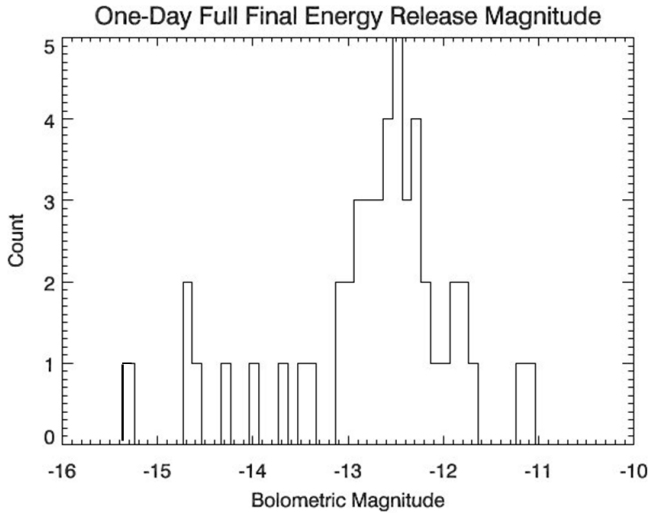
Massive planets have plenty of energy and gas to create observational signatures.

- Released gas observed (WASP 12)
- Luminosity increase not yet found




Orbital energies of the transiting planets, from current orbits (solid lines) and at the start of destruction (dashed). "Destruction" defined by whichever occurs first between Roche lobe overflow (RLOF) or collision with photosphere.

Luminous events will be rare, but possibly bright enough in nearby galaxies to be caught by upcoming transient surveys.




**Nearby galaxy distance moduli:**
**M31 24.5**
**M81 27.8**

**LSST monitor to 18.5**
**SDSS-II to 15.5**
**Pan-STARRS 15**
**Pan-STARRS wide 12.5**

# Planet Destruction: Gas and Luminosity

Gas thru Roche lobe overflow:

Detected for WASP 12 (Fossati et al. 2010)

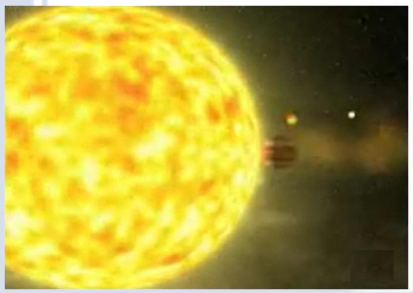
Cause alternating inward/outward migration (Gu et al. 2003)

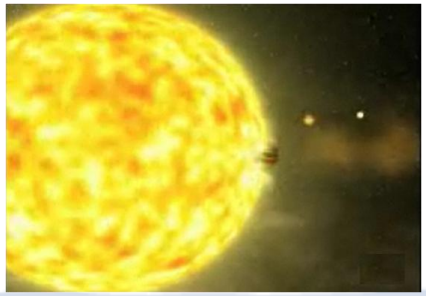
Is the state of synchronization between orbit and stellar rotation disrupted by magnetic braking?

Opportunity to see planets as they are being “stripped”

Do planets leave planetary cores? (Jackson et al. 2009)

How does final destruction proceed, RLOF or collision? (Taylor 2010)





Other Questions

- More common in protoplanetary disks? Protoplanet destruction?
- What effect this much tidal energy input might have on the star ?
- How do the more common hot Neptune and smaller planets proceed through their end state?