Accretion to Outflow Status Report

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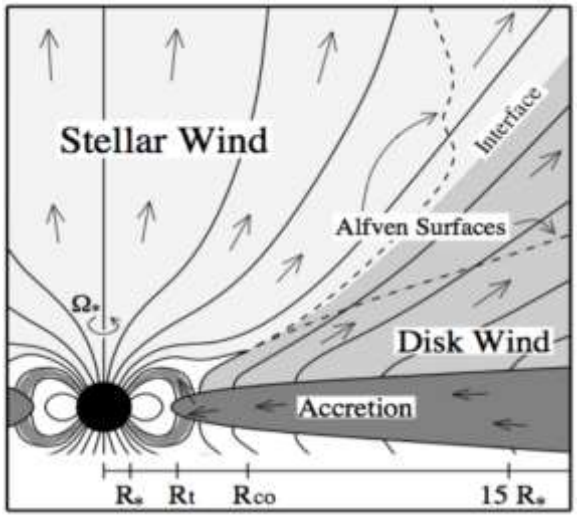
Subaru Telescope/NAOJ

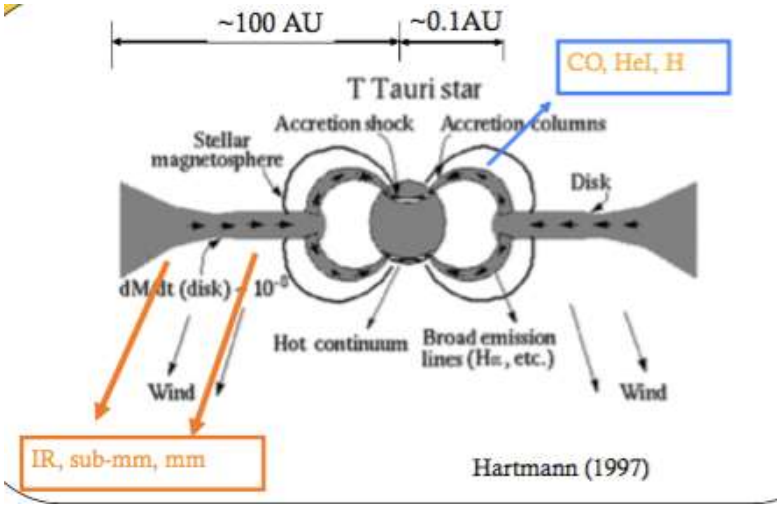
Accretion to Outflow

Mass Accretion → Jet/Outflow

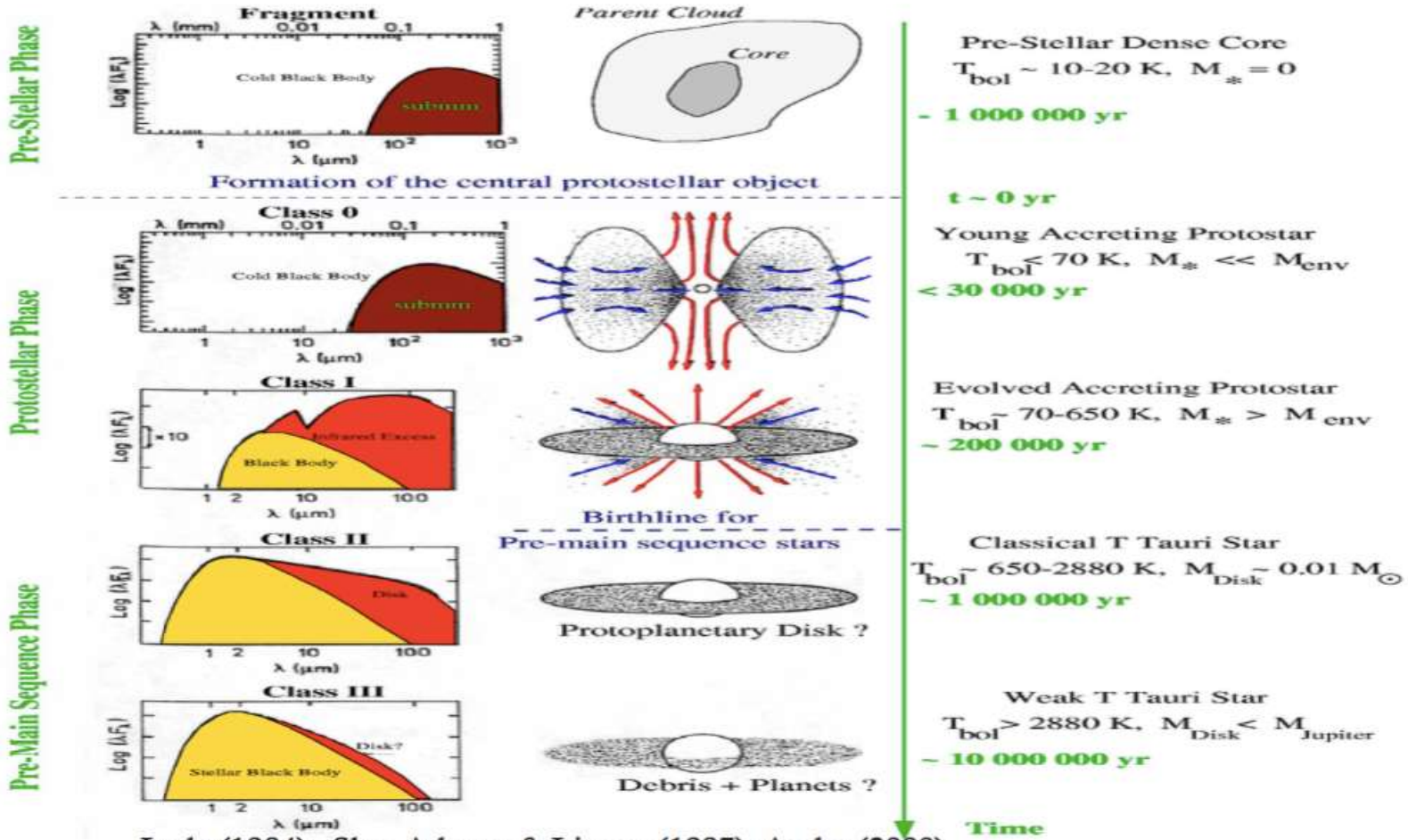
Magneto-Centrifugal Force



Matt & Pudritz (2008)



Class I,II,III: Evolution Phases



Lada (1984); Shu, Adams, & Lizano (1987); Andre (2000)

Measurements

Time variation

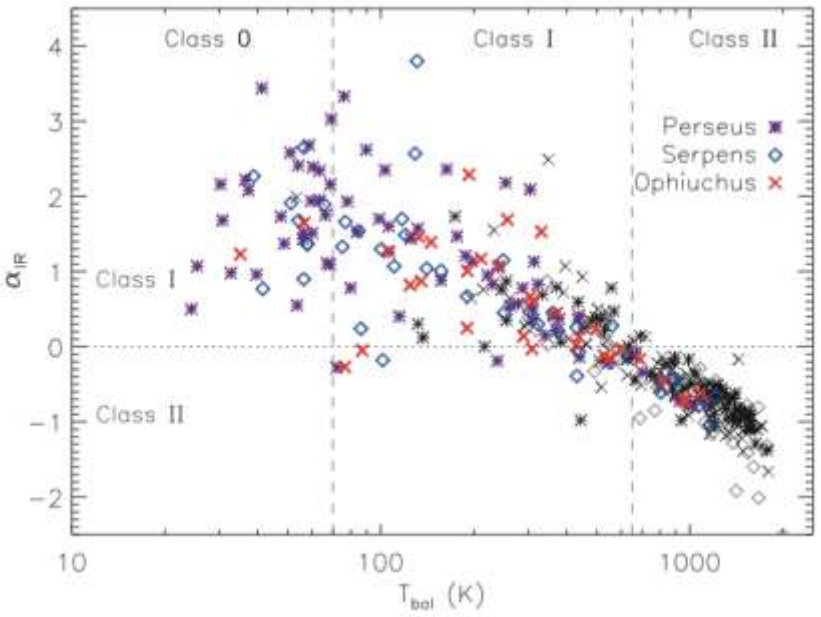
- Simultaneous observation of outflow and accretion signature (H2, [Fe II], Brγ]

Teff, log g, veiling

- Line ratio of photospheric absorption
- Teff: Na interval (2.2-2.21um), Na I, ScI, SiI
  - T decrease: Na I (broaden), Sc I (deeper), Si I (strong)
- Log _g : W (Na I) / W(12CO 2.3 um)
- Lbol

Evolutional phase

- H & K veiling
- Lacc (Class I >> Class II)



Enoch et al. (2009)

Plan of Projects

- Current:
  - 16 objects (H < 14, K < 12 w/ strong [FeII], H2, and Brγ) are observed and now investigating the spectra.
  - Many objects shows flat or featureless continuum with emissions.
- At first we will concentrate emission features (Kinematics, line profile, line ratios)
- Photospheric spectrum Model to measure Teff, log g, veiling.

Featureless continuum of Class I

Weak and broad absorption features		
Veiling by high accretion rate (~ 100 higher then Class II)	Fast rotation : break up velocity in outflow (V >~ 500 km/s)	Magnetic field : a few KG (Zeeman Effect)

Outflow Study w/ IGRINS+Gemini

- Slit Scanning + High spectral resolution → Data cube.
  - High contrast monochromatic images.
  - Channel map with narrow velocity bin. (~ 7 km/s)
  - Cf. No IFU instruments providing R > 10 K.