Understanding the Mechanism of Jet Launching in Active Young Stars (S17B036I)

— Progress Report —

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Project Outline

• What we would like to understand
  • Mechanism of Jet Launching
  • Its physical link with mass accretion

• Major Objective
  • Investigate time correlation between jet ejection & mass accretion onto the star

• Target Stars
  • RW Aur A, RY Tau, DG Tau

• Facilities
  • Jet Imaging ([Fe II] 1.64 μm) with Gemini-NIFS (2012-)
  • Optical Spectroscopy with CFHT ESPaDOnS (2010-)
  • Optical Photometry with CrAO 1.3-m etc. (2010-)

S17B036I
17B, 18B, 19B
5.63 hr for each
Project Outline

RY Tau (blueshifted)

RW Aur A (redshifted)

Ejections covered with CFHT observations
Jet Ejection!

Jet Ejection w/o line profile change

Jet Ejection?

Enhanced mass accretion induced?

Na D

Hα

Ca II

V (km s⁻¹)
Progress since 2017

• 17B,(18A) No Data
  • VLT-SINFONI data for 2 stars were obtained through ESO DDT as an alternative

• 18B observations successfully completed

• Upgrade of the data reduction tool almost completed
  • Observatory’s standard script requires some interactive processes, which may be too much for our data (36 on-source frames for a single visit to a star)

• We will start analysis with all the data soon
Upgrading Data Reduction Tool

- **Telluric Standards**
  - automatic detection of the continuum level  
  - automatic removal of Br absorption  
  - stacking with the GUI tool  
  - Completed

- **Stacking Object Frames**
  - GUI tool for immediately finding & removing bad frames  
  - automatic correction for image shift & $V_{\text{Hel}}$  
  - Completed

- **Telluric Correction**
  - (semi-)automatic scaling of the absorption feature  
  - automatic correction of wavelength shift  
  - Completed

- **Flux calibration**
  - automatic detection of the continuum level  
  - correction of the core/halo flux ratio of the PSF  
  - Completed
Upgrading Data Reduction Tool

- **Continuum Subtraction**
  - to be completed in a week...

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Offset (arcsec)

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W m⁻² μm⁻¹ arcsec⁻²

1e⁻¹³ 7

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