



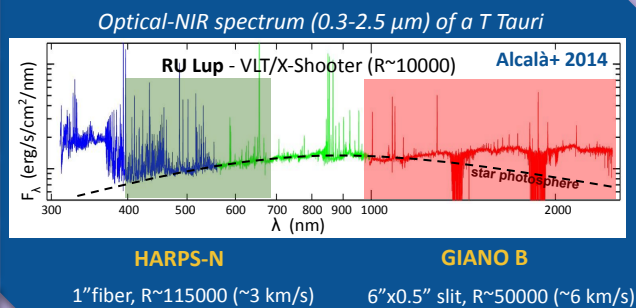
Toward a complete characterization of the YSOs in the TAURUS star forming region



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The GHOSt project

facility	TNG/GIARPS: HARPS-N (VIS) + GIANO (NIR) spectrographs
aims	Derive stellar and accretion/ejection parameters simultaneously and homogeneously. Characterize source structures on a statistically significant sample of T Tauri stars
sample	T Tauri of the Taurus-Auriga star-forming region
obs	~60 hours of observations, 52 sources observed
method	line fluxes, profiles, and absorption features at VIS and NIR wavelengths



Recent results: Connecting atomic and molecular winds in protoplanetary disks

Gangi et al. 2020, A&A, 643, 32

Aim

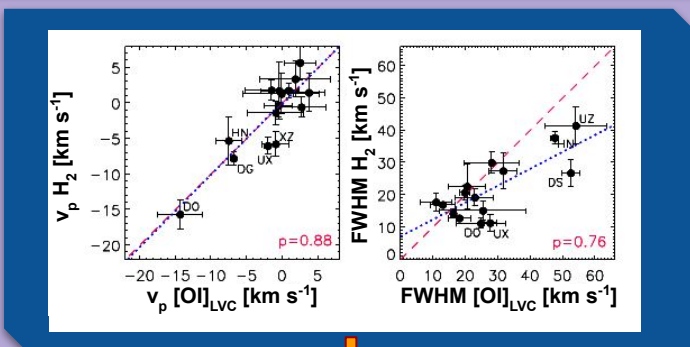
Probe the atomic and molecular winds in a sample of 36 T Tauri stars

Methods

Gaussian decomposition of the flux calibrated [OI] 630 nm and H₂ 2.12 μm lines.

Analysis of the low-velocity components (LVC, $v_p < 20 \text{ km s}^{-1}$)

[OI] detected in all sources but one - H₂ detected in 50% of sources
The H₂ is never detected in sources with luminosity $> 1L_{\odot}$



The LVC of the H₂ and [OI] emission are kinematically linked

Conclusions

- Molecular and neutral atomic emission originate from closely related regions, part of the same wind
- H₂ survival is strictly related to the exposure of winds to the UV photons from the accreting star

More details in Gangi+ 2020 and...

...Stay tuned for new results!

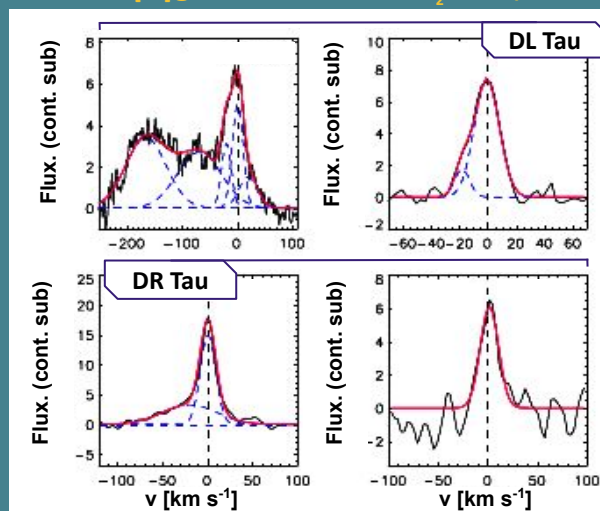
A pilot study of stellar and accretion parameters → Alcalà+, in preparation
Accretion properties in the Taurus-Auriga region → Gangi+, in preparation
Stellar parameters of T Tauri stars → Frasca+, in preparation

Acknowledgements

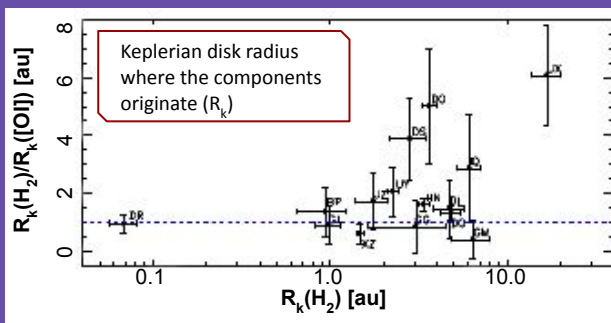
This study is based on observations made with the Italian Telescopio Nazionale Galileo (TNG) operated by the Fundación Galileo Galilei (FGG) of the Istituto Nazionale di Astrofisica (INAF) at the Observatorio del Roque de los Muchachos (La Palma, Canary Islands, Spain)

[OI]@630 nm

H₂@2.12 μm



Example of Gaussian decomposition of detected line profiles



The [OI] emission originates from 0.05 and 20 au and H₂ from 2 and 20 au

GHOSt publications

Antonucci et al. 2017, A&A, 606, 48
Giannini et al. 2019, A&A, 631, 44
Gangi et al. 2020, A&A, 643, 32

