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# Magnetic fields of T Tauri stars and inner accretion discs

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**Abstract.** Magnetic fields play a key role in the early life of stars and their planets, as they form from collapsing dense cores that progressively flatten into large-scale accretion discs and eventually settle as young suns orbited by planetary systems. Pre-main-sequence phases, in which central protostars feed from surrounding planet-forming accretion discs, are especially crucial for understanding how worlds like our Solar System are born.

Magnetic fields of low-mass T Tauri stars (TTSs) are detected through high-resolution spectroscopy and spectropolarimetry (e.g., Johns Krull 2007), whereas their large-scale topologies can be inferred from time series of Zeeman signatures using tomographic techniques inspired from medical imaging (Donati & Landstreet 2009). Large-scale fields of TTSs are found to depend on the internal structure of the newborn star, allowing quantitative models of how TTSs magnetically interact with their inner accretion discs, and the impact of this interaction on the subsequent stellar evolution (e.g., Romanova *et al.* 2002, Zanni & Ferreira 2013).

With its high sensitivity to magnetic fields, SPIRou, the new near-infrared spectropolarimeter installed in 2018 at CFHT (Donati *et al.* 2018), should yield new advances in the field, especially for young embedded class-I protostars, thereby bridging the gap with radio observations.

## References

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