Contribution ID: **20** Type: **Contributed talk**

Impacts of Energetic Particles from T Tauri Flares on Inner Protoplanetary Discs.

Friday 9 May 2025 11:10 (20 minutes)

T Tauri stars are known to be magnetically active stars subject to strong flares observed in X-rays. These flares are likely due to intense magnetic reconnection events during which a part of the stored magnetic energy is converted into energetic supra-thermal particles.
Since T Tauri stars are surrounded by accretion discs, these particles may influence the disc dynamics and chemistry. The talk will discuss our methods for modelling particle acceleration in T Tauri flares. We will then examine the ionization rate produced by these flares, relying on data from the Chandra X-ray survey of nearby young stellar objects.
Our work indicates that energetic particles from flares significantly contribute to the ionisation of the disc. The talk will also address the consequences of this additional ionisation source on the inner disc, focusing on its impact on accretion rates, chemical complexity, heating rates, and potential observables by the James Webb Space Telescope.

This talk will provide new insights about the interactions between young stars and the discs surrounding them.

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