



Contribution ID: 17

Type: **Invited talk**

## Stellar abundances with 3D model atmospheres

*Monday 16 September 2024 14:35 (25 minutes)*

The chemical compositions of stars place key constraints on nuclear astrophysics. The most precise way of determining these compositions is through analyses of the absorption lines in the observed star light (stellar spectroscopy). However, the accuracy of standard analyses of Sun-like stars can be limited by various simplifying assumptions. The vast majority of analyses take the atmosphere of the star to be one-dimensional (1D) and hydrostatic. More accurate results can be obtained via three-dimensional (3D) radiation-hydrodynamics simulations. Another common assumption is that of local thermodynamic equilibrium (LTE). For certain lines and stars, the inherent shortcomings of 1D models can mask the impact of departures from LTE; in other words, it is even more important to take non-LTE effects into account when using 3D models. I shall describe this 3D non-LTE approach, and then present examples where its application has altered our understanding of the evolution of the elements in the cosmos.

**Primary author:** AMARSI, Anish (Uppsala University)

**Presenter:** AMARSI, Anish (Uppsala University)

**Session Classification:** Plenary Session