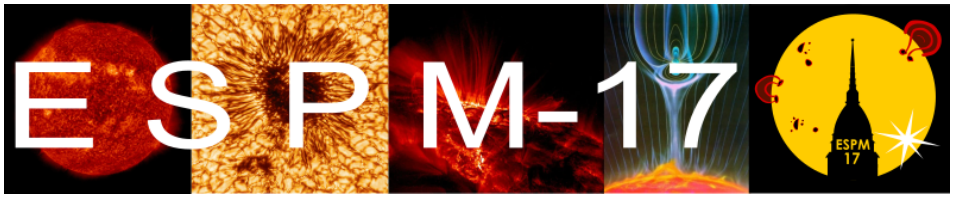

Contribution ID: **78** Type: **Poster**

Inference of atomic line parameters from quiet-sun observations at 1.56 microns

Many spectral lines used for solar observations have poorly determined atomic parameters, such as the transition probability or the central wavelength. Using poor atomic line parameters in spectropolarimetric inversions produces erroneous results for inferred atmospheric parameters. Therefore, we applied a newly developed coupled inversion method to infer the transition probability and wavelength of lines at 1.56 μm from quiet-sun disc-center spectropolarimetric observations taken with the GRIS instrument mounted at the 1.5-meter GREGOR solar telescope. The coupled inversion method relies on the self-consistent inference of the atmospheric and atomic parameters by imposing a spatial coupling in the latter. The retrieved line parameters agree well with previous determinations, in which line parameters were allowed to vary between pixels. However, these modest differences in the atomic line parameters show measurable offsets in atmospheric parameters, mainly in the temperature and line of sight velocity. The retrieved atomic parameters are contrasted against different node placements of the atmospheric parameters. We also considered the variation in the retrieved atomic parameters by inverting different patches from the observed field of view to test the robustness of the coupled method.

Primary author: VUKADINOVIC, Dusan

Co-authors: Dr KORPI-LAGG, Andreas (Max Planck Institute for Solar System Research); SOLANKI, Sami (Max Planck Institut for Solar System Research); NARAYANAMURTHY, Smitha (Max Planck Institute for Solar System Research)

Session Classification: Coffee break and poster session 2

Track Classification: Diagnostic tools and numerical methods in solar physics