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Wave propagation in a sunspot atmosphere at high resolution

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Waves and oscillatory phenomena have been observed in the solar atmosphere as mechanisms that transfer energy through its different heights, from the photosphere to outer layers. Hence, they are considered as one of the main processes responsible for heating the upper solar atmosphere. This study aims to detect and characterize various MHD wave modes in a sunspot atmosphere (i.e., active region AR12533), based on high-resolution observations with the Swedish 1-m Solar Telescope (SST), complemented by co-observations with the Interface Region Imaging Spectrograph (IRIS) and the Solar Dynamic Observatory (SDO) space missions. The SST observations sample various atmospheric heights in the lower atmosphere, taken in multiple wavelength positions of the Ca II 852.2 nm (in full Stokes) and H α 656.3 nm spectral line. The MHD waves are traced throughout the solar atmosphere by analysing temporal evolution in intensities and Doppler velocities and shifts in wave frequency. This poster presents the preliminary results and outlines the next steps of these waves propagation analysis.

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