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Reference quiet-Sun Lyman-alpha and Mg II h&k line profiles as a boundary condition for radiative transfer modelling of the solar atmosphere

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The solar radiation in the Lyman-alpha and Mg II h&k spectral lines plays a crucial role in the illumination of chromospheric and coronal structures, such as prominences/filaments, spicules, chromospheric fibrils, cores of coronal mass ejections, or solar wind. Moreover, it is important for the investigation of the heliosphere, Earth ionosphere, and the atmospheres of planets, moons, and comets.

We derived new sets of reference profiles of Lyman-alpha and Mg II h&k lines which describe the radiation from the solar disk during a minimum of solar activity. For the Lyman-alpha line, we used SOHO/SUMER raster scans obtained without the use of the SUMER attenuator while for the Mg II h&k lines we used the broad catalogue of IRIS full-Sun mosaic. We present here the reference profiles and their variation with the position on the solar disk and with the solar cycle. We also analyze how the change of the incident radiation influences the synthetic spectra produced by the radiative transfer modelling. The reference profiles data sets are published in Gunár et al. (2020) and Gunár et al. (2021).

Student poster?

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