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Modeling the detailed Lyman-α line profile

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The variability of the solar spectral irradiance is an important driver in global circulation models. The Lyman-α spectral line is of particular interest as it exhibits a high variability and has strong impact on the ozone concentration and temperature in the Earth's atmosphere. For a complete understanding of the variation of the Lyman-α line it is important to be able to model its detailed line profile. We present recent work on the improvement of the modeling efforts of this important spectral line. We employ an updated version of the COde for Solar Irradiance (COSI) along with existing model atmospheres with an improved implementation of the temperature and turbulent velocity in the chromosphere and transition region. With the latest modifications we are able to reproduce high resolution observations taken with the SUMER instrument onboard of SOHO. This is an important step towards the reliable reconstruction of the irradiance in the Lyman-α spectral line.