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UV/EUV spectral synthesis in spherical symmetry

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The Sun's varying output in the UV/EUV has strong effect on the Earth's ionosphere and e.g. satellite positioning. We present latest progress in modeling the solar UV/EUV irradiance spectrum based on physical principles. We use the Solar Radiation Physical Modeling (SRPM) system to calculate the solar UV/EUV spectrum for the wavelength range from 10 to 180 nm. We solve the full NLTE for the most abundant elements from H to Fe up to ion charge 2. For the higher ionization states we solve the statistical equation with an optically thin approach, i.e. using the collision strengths and spontaneous emission. Currently we account for a total number of 14 000 atomic levels and 170 000 spectral lines. For computing the optically thin coronal spectrum we use line of sight calculation in spherical symmetry, which allows us to correctly calculate the contribution of the corona to the irradiance spectrum. Inputs to our calculations are 1D atmosphere structures for the chromosphere and transition region for different solar surface features and different sets of coronal temperature structures for coronal features. We discuss the differences of the coronal structures and compare the synthetic UV/EUV spectra with observations such as the spectrum taken with the EVE rocket instrument on April 14, 2008 and the EUV spectrum taken with the SOLAR platform on the ISS.