Can the EUV spectrum and its variability be rebuilt from a small set of spectral lines ?

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The severe lack of continuously measured and spectrally resolved solar EUV spectra is a major obstacle towards modelling the impact of the solar irradiance on the ionosphere. The usual solution involves the measurement of various proxies. We consider a different approach, in which the EUV spectrum and its variability are reconstructed from the linear combination of a few spectral lines.

Using three years of spectra from TIMED and a statistical classification technique, we demonstrate that 5 to 8 lines only are needed and in addition show which lines are the best candidates. These results are valuable for instrument specification and also provide new insight into the comparison of solar proxies against the EUV irradiance.