COMMENTS ON THE IMPACT OF WING CUT-OFF ON COMPUTING ABSORPTION CROSS SECTIONS: BEST PRACTICE WITH APPLICATION TO MAESTRO OPACITY DATABASE

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Wing cut-off dictates the frequency extent to which the Lorentzian line wings are computed from the line core. Establishing a consistent policy for determining the limit of the extent of the line profile is a difficult and complex problem. For any given species a knowledge of the true shape of the line wing usually defined as the region beyond a certain multiple of the line width of the central core may not be well established either by theory, experiment, or a combination of the two. Inaccuracy in the wing cut-off results in up to a few magnitudes of error in the opacity continuum and biases the modeled transmission and emission spectra, and ultimately impacts/biases the interpretation of observational spectra and the derived composition and thermal structure. Uncertainties in the calculation of absorption cross-section data in far wings and the line shape spectroscopic parameters for high pressures ($>$100 atm) are among those challenges that should be considered for generating accurate data for atmospheric radiative transfer modeling studies. In this talk, our community efforts to address these issues will be presented.