Pitfalls of Incorporating Quasi-Molecular Features in White Dwarf Model Atmospheres

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Quasi-molecular satellites are a significant source of opacity in white dwarf atmospheres, particularly near Lyman-α. Combining the contribution of quasi-molecular profiles with standard Stark broadened profiles in such a way as to preserve their interaction is challenging, so simplifications are often made which assume the two profiles can be simply added together. However, quasi-molecular broadening and Stark broadening are not independant processes and this assumption may have a significant effect on theoretical line shapes. In this poster we test the validity of different methods for combining separate hydrogenic line shapes broadened by plasma electrons and protons by comparing them to profiles with simultaneous consideration of the plasma particles. We discuss the impact these approximations have on emergent white dwarf spectra and highlight a deficiency in current quasi-molecular calculations.