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Pressure broadened alkali-metal resonance lines in brown dwarf and extrasolar planet spectra¹ JAMES BABB, Harvard-Smithsonian Center for Astrophysics

In the last ten years many brown dwarfs and many extrasolar planets have been discovered creating excitement in the astronomical sciences. Brown dwarfs are substellar objects and they can be classified by various parameters. The cooler dwarfs, class L and class T, exhibit prominent, broad spectral features thought to originate from the resonance lines of Na and K pressure broadened via He and molecular hydrogen in their atmospheres. In addition, astrophysicists believe that for certain specific cases (hot Jupiters) extrasolar giant planets irradiated by their host star will exhibit similar spectral features. We are modeling the pressure broadening using a combination of experiment and theory. Our application of atomic and molecular physics to this frontier of astrophysics will be discussed.

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