Physical data needs for select problems in stellar atmospheres

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Abstract

Over the past ten years there has been a renewal of interest in stellar atmospheric and spectrum modeling and the information it can provide. This has been driven by several observational developments: 1) the discovery and characterization of Brown Dwarfs, 2) the discovery of extremely metal poor (XMP) stars, 3) the discovery of extra-solar planetary systems, and 4) the surprising revision in the abundances of important elements in the solar atmosphere. Various of these fields are dependent upon, and plagued by uncertainty in, physical data for atomic and molecular radiative and collisional processes. Particular areas of concern include data for Iron group elements and collisional cross-sections for molecules. At stake is our ability to use stars as accurate tracers of the chemical evolution of galaxies, and the interaction of planetary systems with their host stars.

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