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Atomic Data for the Diagnosis of Astrophysical Plasmas

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Atomic spectroscopic data are used in a wide variety of fields including diagnosis of industrial plasmas, detection of trace elements, and calibration of spectrometers. No field, however, makes as many demands in terms of quantity and quality of atomic data as astrophysics. To analyze a stellar spectrum, we need to know where the spectral lines are, how strong they are, and what shape they are. I shall give examples of how measurements of these quantities made in the Atomic Spectroscopy Group at the National Institute of Standards and Technology are being used to improve our knowledge of stellar and solar atmospheres, find out how the elements were made, and test the possible variation of the fine structure constant in the early Universe.