

# The CHIANTI Atomic Database: New Improvements For Solar Physics Applications

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**Abstract.** Solar observations at EUV wavelengths obtained with Hinode and the Solar Dynamics Observatory (SDO) have presented new challenges for atomic physics. The EUV Imaging Spectrometer (EIS) on Hinode has returned high resolution spectra of the coronal iron ions (Fe VIII-XVII) for several years, allowing new line identifications to be made and enabling density diagnostics to be studied in unprecedented detail. Several new atomic calculations have been performed to better model the coronal iron ions, and important new results will be summarized. SDO has presented different challenges: the EUV Variability Experiment (EVE) obtains low resolution spectra averaged over the full solar disk over the range 50-1050 Å, while the Active Imaging Assembly (AIA) takes high resolution images in several narrow EUV passbands. For EVE there is a need for complete atomic models for large numbers of ions in order to better model the Sun's EUV irradiance. For CHIANTI, new atomic models under preparation include 1000's of levels, compared to current models with 10's or 100's of levels. Large, extended atomic models are also required to completely model the passbands of AIA, but the narrow size of these passbands also means that accurate wavelengths are essential. Efforts to produce accurate theoretical wavelengths for previously unobserved transitions have been performed by the CHIANTI team, but ultimately new high resolution solar or laboratory spectra are required, particularly in the soft X-ray region. A new release of CHIANTI containing the described improvements is scheduled for release this fall.