

**Modeling for Non-equilibrium plasma diagnostics for LHD and Solar-B**

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This year, Solar-B satellite in order to observe the Sun will be launched in Japan. Solar-B has three kinds of detectors for optics, EUV, and X-ray observations. Very high-resolved spectra are measured with the EUV imaging spectrometer (EIS). EIS measures two bands of 170A-210A and 250A-290A where many lines of M and L shell Fe ions are detected. Analysis of these lines without assuming ionization equilibrium is required to understand coronal heating mechanism in transition-coronal region. However construction of non-ionization equilibrium plasma model is difficult if we take into account the transport of plasma particle.

In this paper, comparisons with calculated spectra by CHIANTI and our model assuming ionization equilibrium, and useful intensity ratios for plasma diagnostics are presented. Our model includes energy levels from H-like to Ca-like Fe ions and atomic processes with cross sections calculated by the HULLAC code. For excitation processes of Si-like Fe ions we use recommended data. Time-resolved EUV spectra in ionization non-equilibrium plasma are measure from large helical device (LHD) at NIFS. Spectral lines are identified and time dependence of line intensities is studied.