

Abstract Submitted
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Emission line spectra of Fe XI for astrophysical plasmas in the extreme ultraviolet region 60 - 140 Å.¹ JAAN LEPSON, Space Sciences Laboratory, University of California, Berkeley , PETER BEIERSDORFER, GREGORY BROWN, DUANE LIEDAHL, Lawrence Livermore National Laboratory — Accurate spectral catalogs are essential to analyze spectra of astrophysical plasmas observed by orbiting EUV and x-ray observatories, such as *Chandra*, *XMM – Newton*, *Hinode*, and the *Solar Dynamics Observatory*. We report here on emission spectra of iron in the extreme ultraviolet recorded at an electron density of $\sim 5 \times 10^{11} \text{ cm}^{-3}$ at the Lawrence Livermore electron beam ion trap facility. In particular, we present measured spectra of Fe XI, covering the region 60 - 140 Å. The spectra contain a large number of lines, which despite being rather weak compared to the stronger and better known lines above 170 Å, can add up to significant flux. The measured spectra are compared to existing spectral data and newly calculated theoretical data. We use these calculations to tentatively identify the lines, most of which have not been identified before, and present measured and calculated wavelengths and line intensities. We use these measurements to identify new lines of Fe XI in the corona of Procyon, and reassign to Fe XI additional lines that had been previously attributed to other elements. We also find that the Fe XI emission contains multiple $4f - j, 3d$ transitions that fall into one of the iron channels aboard the *SDO* centered around 94 Å.

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Jaan Lepson
Space Sciences Laboratory, University of California, Berkeley

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