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Tipo de Comunicación: Poster

Sesión Científica: Instrumentacion y sipercomputacion

Titulo: SPEX (Plasma Code & Spectral Fitting Tool). Collisional ionization for atoms and ions of H to Zn

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Resumen:

Every observation of astrophysical objects involving a spectra requires some aspects of atomic data for the interpretation of line fluxes, ratios and ionization state of the emitting plasma. One of the thermal radiative process which determines it, partially, is the collisional ionization. In this study the direct ionization and excitation-autoionization processes has been taken into account, leaving the resonance excitation double autoionization and multi ionization for future work. The most recent assessments have been performed by Dere (2007, A&A 466, 771) for H to Zn isoelectronc sequences, Arnaud. & Raymond (1992 ,ApJ. 398, 394) for Fe and Arnaud & Rothenflug (1985, A&AS, 60, 425). However, in the last years new laboratory measurements and theoretical calculations of ionization cross sections have become accessible. Our main goal is to provide a review, extension and update of these previous works and be able to obtain the cross sections for the dif ferent inner shells of all ions from H to Zn isoelectronic sequences. Once all dataset available are identified, they have been fitted using an extension of Younger\'s formula, suitable for integration over a Maxwellian velocity distribution to derive the ionization rate coefficients. For the elements with non available data, the cross section has been interpolated or extrapolated. The results of the present work will be included together with radiative recombination rates data (Mao et. al 2016, A&AS, 27568), a change-exchange model (Gu et al. 2016, arXiv:1601.05958) and another atomic data in SPEX (Kaastra et al. 1996, UV and X-ray Spectroscopy of Astrophysical and Laboratory Plasmas) SW, utilized for X-ray spectra modeling, fitting and analysis. SPEX will be extensively used for the analysis of the measurements obtained with the Astro-H (Hitomi) satellite.