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Cascade L-shell soft x-ray emission as incident x-ray photons are tuned across 1s ionization threshold DIMOSTHENIS SOKARAS, SLAC National Accelerator Laboratory, ANDREI KOCHUR, Rostov State University of Transport Communication, MATTHIAS MUELLER, MICHAEL KOLBE, BURKHARD BECKHOFF, Physikalisch-Technische Bundesanstalt, MICHAEL MANTLER, Technische Universitat Wien, CHARALAMBOS ZARKADAS, PANalytical B.V, MILTIADIS ANDRIANIS, ANASTASIOS LAGOYANNIS, Institute of Nuclear Physics, N.C.S.R. "Demokritos", ANDREAS-GERMANOS KARYDAS, International Atomic Energy Agency — The cascade L-shell x-ray emission as an incident polarized and unpolarized monochromatic radiation overpass the 1s ionization threshold is investigated for the metallic Fe by means of moderate resolution, quantitative x-ray spectrometry. A full *ab initio* theoretical investigation of the L-shell x-ray emission processes is performed based on a detailed straightforward construction of the cascade decay trees within the Pauli-Fock approximation. The agreement obtained between experiments and the presented theory is indicated and discussed with respect to the accuracy of advanced atomic models as well as its significance for the characterisation capabilities of X-Ray Fluorescence (XRF) analysis.

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