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A reliable collisional radiative model for laser produced Zn plasma[1] SHIVAM GUPTA, Indian Institute of Technology Roorkee, REETESH GANGWAR, Indian Institute of Technology Tirupati, RAJESH SRIVASTA, Indian Institute of Technology Roorkee — We consider the laser produced zinc plasma (LPZP) having leading applications in the generations high-order harmonics, attosecond pulses and wake-field acceleration etc. However, no study has focused on LPZP in a detailed manner. An intricate collisional radiative (CR) model is developed for the LPZP including all the important processes. The electron impact excitation and de-excitation of several fine structure levels of Zn play dominant role in LPZP and their cross-sections are highly needed. We calculate fine-structure resolved electron excitation cross sections of 4s4p, 4s5s, 4s5p, 4s4d, 4s6s, 4s6p, 4s5d, 4s7s and 4s7p configurations of Zn from the ground and among these excited state configurations using relativistic distorted wave approach [1].We demonstrate the application of the calculated cross sections by developing a CR model [2] and coupling it with OES measurements of Smijesh et al [3] for the diagnostics of LPZP. [1] T. Das et al., Phys. Rev A **86**, 022710, 2012 [2] S. Gupta *et al.*, Spectrochim Acta – Part B At Spectrosc **149**, 203, 2018 [3] N. Smijesh et al., J Appl Phys **114,** 093301, 2013

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