

EXCITATION OF DIELECTRONIC SATELLITES
OF RESONANCE LINES OF Cd⁺ IONS
IN ELECTRON-ION COLLISIONS

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S u m m a r y

Identification of subthreshold structures in the experimentally studied energy dependences of effective electron excitation cross sections for $\lambda = 226.5$ and 214.4 nm resonance lines of Cd⁺ ions is suggested. The experiment was performed by spectroscopic method using the monoenergetic electron and ionic beams crossed at 90° angle. It has been found that the subthreshold features are due to the resonant capture of an incident electron by an ion, excitation of the “electron + Cd⁺ ion” system into the $4d^{10}5p(^2P_{1/2,3/2})nl$ autoionizing states (AIS), and their decay to the excited $4d^{10}5snl$ states of an Cd atom, i.e. the features are the dielectronic satellites of resonance lines. Absolute values of the excitation cross sections for the dielectronic satellites are $(0.2 \div 1) \cdot 10^{-16}$ cm² and are of the same order of magnitude as the effective excitation cross sections for resonance lines of Cd⁺ ion. It has been shown that the considerable rise in the probability of radiative decay of the autoionizing $4d^{10}5p(^2P_{1/2,3/2})nl$ states of Cd atom is related to a strong configuration mixing of the above states.