

MEASUREMENTS OF EXCITATION
FUNCTIONS FOR NONRADIATIVELY
DECAYING AUTOIONIZING STATES

O. O. Borovik

Institute of Electron Physics
(21, Universitetska Str., Uzhgorod 88000, Ukraine;
E-mail: iep@iep.uzhgorod.ua)

The experimental method and apparatus developed for the electron spectroscopy studies of electron impact excitation functions of non-radiatively decaying autoionizing states in atoms are described. The excitation functions are obtained by taking the ejected-electron intensities measured at different values of the impact energy as a function of this energy. The experimental procedure includes the measurements of three kinds of electron spectra - the ejected-electron spectra at different values of the impact energy, the test ejected-electron spectra at the fixed impact energy value and the electron energy-loss spectra below the first ionization potential of atoms. The last two spectra allow one to control the stability of the experimental conditions during the time of experiments and provide the calibration of energy scales. The method and data processing procedure take into account all the peculiarities of electron spectroscopy experiments, including the time variations of energy scales and the influence of the post-collision effect. The performance of the method is illustrated by the ejected-electron excitation functions obtained for some autoionizing states in lithium, potassium, and strontium atoms.