REGULARITIES IN THESTARK BROADENING
AND SHIFT PARAMETERS OF SPECTRAL LINES

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This lecture surveys some recent advances in plasma diagnostic research based on
the investigation of spectral line shapes. The emphasis is on contribution to: (i)
the experimental measurements and theoretical calculations of the Stark broadening
parameters of large number of spectral lines originating from different neutral and
ionized emitters; (ii) verification of the Stark parameters dependence on the funda-
mental plasma parameters such as are the electron density (N) and temperature (T);
(iii) discovering and verification of Stark parameters dependence on different atomic
structure parameters such as are the upper level ionization potential (χ) of a particu-
lar transition within transition array or the same type of transition (a.g. resonance’s
or off resonance’s) of all elements in Periodic table, χ and rest core charge (Z_c) of the
emitter seeing by the electron undergoing transition within isoelectronic and isonu-
clear sequences, (and nuclear charge number (Z) within homologous sequences; (iv)
Stark parameters calculation using the established dependence on the upper level ion-
ization potential for the spectral lines not been investigated so far experimentally or
theoretically but belonging to the above mentioned similar spectra, and (v) compar-
ison of the our experimental and theoretical data with those obtained by the other
authors.