Spectral Line Broadening and Interatomic Potentials; Applications to Systems of Astrophysical Interest

G. Peach & I.B. Whittingham
Department Physics and Astronomy, University College,
Gower Street London WC1E 6BT, UK
e-mail: g.peach@ucl.ac.uk

Abstract

Accurate interatomic potentials provide the essential starting point for realistic calculations of the broadening of spectral lines of an emitting atom where the perturbers are surrounding neutral atoms of the same or different species. Progress on the calculation of interatomic potentials for the Ne-Ne, Ar-Ar and Na-H systems is discussed and the relative merits of fully quantum-mechanical and semi-classical broadening calculations are highlighted. The reliability or otherwise of results for line broadening parameters obtained using a simple classical Van der Waals approach is assessed.

Spectral Line Shapes as a Tool for Investigation Kinematics and Physics of Plasma in Quasars

L. Č. Popović
Group for Astrophysical Spectroscopy - GAS, Astronomical observatory Belgrade,
Volgina 7, 11160 Belgrade, Serbia
e-mail: lpopovic@aob.bg.ac.yu

Abstract

One of the characteristics in spectra of quasars is a strong emission in line spectra. There are broad and narrow lines indicating a broad and a narrow line region. Beside these two regions, often a very broad component is present in Balmer lines, indicating a so called very broad emission region. Additionally, in UV spectra of around 10% of quasars, the broad absorption lines are present. Here we are going to give an overview of investigation where line shapes and intensities are used for plasma diagnostic in quasars.