X SERBIAN CONFERENCE ON SPECTRAL LINE SHAPES IN ASTROPHYSICS
June 15-19, 2015, Srebrno jezero, Serbia
Book of Abstracts, Eds. L. Č. Popović, M. S. Dimitrijević and S. Simić
Astronomical Observatory, Belgrade, 2015

Poster

ATOMIC DATA FOR TRANSITIONS IN C I

R. Qindeel, N. Alonizan and N. Ben Nessib

Department of Physics and Astronomy, College of Science, King Saud University, PO. Box 2455, Riyadh 11451, Saudi Arabia

E-mail: rqindeel@ksu.edu.sa, nalonizan@ksu.edu.sa, nbennessib@ksu.edu.sa

In the first part of this work, atomic data for neutral carbon (CI) lines have been calculated using the Cowan suite of atomic structure codes. The pseudo relativistic Hartree-Fock (HFR) approach is used in this suite of codes. The least-squares fitting, fourth code RCE have been used for the fitting of obtained energy levels values with the experimental ones (form NIST atomic database). Then re-run of the third code RCG with these fitted energy levels which gives better oscillator strengths values. The first 8 even configurations ($2s^2$ $2p^2$, $2s^2$ 2p 3p, $2s^2$ 2p 4p, $2s^2$ 2p 5p, $2s^2$ 2p 6p, $2s^2$ 2p 4f, $2s^2$ 2p 5f, $2s^2$ 2p 6f) and 9 odd configurations (2s $2p^3$, $2s^2$ 2p 3s, $2s^2$ 2p 4s, $2s^2$ 2p 5s, $2s^2$ 2p 6s, $2s^2$ 2p 3d, $2s^2$ 2p 4d, $2s^2$ 2p 5d, $2s^2$ 2p 6d) are used in our atomic model.

In the second part of this work, the Thomas-Fermi-Dirac-Amaldi (TFDA) potential have been applied using the AUTOSTRUCTURE code to have the energy levels and oscillator strengths for the CI lines.

The values obtained with these two codes have been compared with other theoretical and experimental ones.