

**QUANTUM-MECHANICAL CALCULATIONS
OF Ne VII SPECTRAL LINE WIDTHS**

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Diagnostic of stellar and laboratory plasmas, atomic abundances, opacity calculations, particles densities can be determined through knowledge of Stark broadening of isolated spectral lines of multicharged ions in plasmas.

Several methods and techniques were used for the evaluation of broadening parameters, we can cite semi-classical (Griem 1974, 1997, Sahal-Bréchet 1969), modified (Dimitrijević and Konjević 1980), semi-empirical (Griem 1968) and quantum-mechanical calculations (Baranger 1958, Seaton 1988, Griem et al. 1997, Ralchenko et al., 1999, 2001, 2003). The two first methods showed a good accuracy for neutral elements and low-charge ions. But, most of the quantum-mechanical calculations are still very limited and they showed that they underestimate the majority of experimental widths and they have the greatest difference from the experimental results compared to the other theoretical calculations. Consequently, new accurate calculations and a detail comparison with experiments become an important and an urgent task.

In this work, we apply our quantum-mechanical expression (Elabidi et al. 2004) to the calculations of electron impact Stark widths of the Ne VII 2s3s-2s3p transitions. Calculations are made in the frame of the impact approximation and for intermediate coupling, taking into account fine structure effects. A comparison between our calculations and experimental and other theoretical results showed a good agreement. This is the first time that we find such a good agreement between quantum and experimental line widths of highly charged ions.

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Poster paper

**CONNECTION BETWEEN CENTRAL BLACK HOLE
AND CIRCUM-NUCLEAR GAS KINEMATICS:
THE CASE OF AGN WITH DOUBLE-PEAKED LINES**

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Less than 5 percents of active galaxies have optical double-peaked broad lines which indicate presence of an accretion disk in the Broad Line Region (BLR). Using these lines, it is possible to determine accretion disk parameters (inner and outer radius, inclination). Here we will present an analysis of accretion disc parameters obtained from a sample Active Galactic Nuclei (AGN) with double peaked lines from SDSS.

These parameters will be compared with the circum-nuclear gas kinematics in order to make systematic analyze of mass transfer mechanism from galactic scales, down to nuclear scales, and feedback of activity on a process of star formation in the circum-nuclear region.