

**THE BROAD LINE REGION PHYSICS IN ACTIVE GALAXIES:
ATOMIC PROCESSES IN THE SUPERMASSIVE BLACK HOLE
VICINITY**

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Active Galactic Nuclei (AGNs) are an ideal laboratory to study the physics of the ionized gas in extreme conditions that are hardly reproduced on Earth. Notwithstanding the fact that AGNs are known and studied since several decades, the physics of the ionized gas, and in particular of the BLR, is still poorly understood. In order to develop and improve diagnostic methods needed for the estimation of the physical conditions in the particular parts of AGNs the investigation of the influence of various relevant atomic and molecular collisional processes is needed. This is particularly significant for better estimate of the hydrogen Balmer lines fluxes, which usage for effective temperature diagnostics in astrophysical plasma is limited by errors from the line formation models and uncertainties in used atomic data of hydrogen atom and inelastic collisions. The aim of this contribution is to go deep in the physics of AGN, to investigate some atomic ionization and excitation processes and revise their role.