

## Rate coefficients and cross-sections for some collisional processes involving Rydberg atoms

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Processes of ionization which include highly excited atoms and molecules in various environments continue to draw attention of researchers because of their influence on the spectral characteristics of astrophysical and laboratory plasmas (Gnedin et al. 2009). Considered collisional ionization/recombination processes, which involve highly excited Rydberg atoms-RA(n) can influence on the ionization level and atom excited-state populations, and have a very significant influence on the optical properties. We obtained the cross-sections, as well as rate coefficients for potassium and sodium cases. The collisional data are obtained for wide range of parameters ( $500 \text{ K} < T < 10\,000 \text{ K}$ ) and principal quantum numbers up to 25. Our aim is to determine high quality data in order to be properly included in modern codes and databases for modelling geo-cosmic plasma, laboratory plasma, planetary atmospheres, ionosphere, etc. (Albert et al. 2020).

### References

- Albert, Damien, et al. "A decade with VAMDC: Results and ambitions." *Atoms* 8.4 (2020): 76.
- Gnedin, Yu N., et al. "Rydberg atoms in astrophysics." *New astronomy reviews* 53.7-10 (2009): 259-265.