

NON-ELASTIC PROCESSES IN ATOM - RYDBERG ATOM COLLISIONS: REVIEW OF STATE OF ART AND PROBLEMS

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In our previous research has been demonstrated that such inelastic processes in atom Rydberg-atom collisions, as chemi-ionization and (n-n') mixing, should be considered together. Here will be reviewed the present state of art and the actual problems will be discussed. In this context will be considered the influence of the (n-n') mixing during a symmetric atom Rydberg-atom collision processes on the intensity of chemi-ionization process. It will be taken into account $H(1s) + H^*(n)$ and $He(1s^2) + He^*(n)$ collisional systems, where the principal quantum number $n \gg 1$, as well as $A + A^*(n)$ systems, where A denotes one of the alkali metal atoms. It will be demonstrated that the inclusion of (n-n') mixing in the calculation, influences significantly on the values of chemi-ionization rate coefficients, particularly in the lower part of the block of the Rydberg states. Different possible channels of the (n-n') mixing influence on chemi-ionization rate coefficients will be demonstrated. The possibility of interpretation of the (n-n') mixing influence will be considered on the basis of two existing methods for describing of the inelastic processes in symmetrical atom Rydberg-atom collisions.