

Ionization and charge exchange cross sections in collisions of singly charged lithium and sodium ions with helium and nitrogen atoms

We present total and energy and angular differential cross sections for single-ionization and single charge exchange in a collision between singly charged lithium and sodium with ground-state helium and nitrogen atoms. For sake of simplicity, the considered collision systems are treated as three-body problems. The helium and nitrogen atomic targets are described within the single active electron approximation using a Garvey-type distance-dependent model potential where only the ground-state outermost electron is involved in the collision dynamics as an active electron while the other bound electrons are considered inactive [1, 2]. The interactions between the projectile and target system are also described by the Garvey-type potential. The scattering problem is solved within the frame of the classical trajectory Monte Carlo (CTMC) [3].

We found that the classical treatment of the collision problem describes reasonable well both the total and differential cross sections. Our present CTMC results are in good agreement with available theoretical and experimental data.

This work has been carried out within the framework of the EUROfusion Consortium, funded by the European Union via the Euratom Research and Training Programme (Grant Agreement No 101052200 —EUROfusion). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for

References

- [1] R.H. Garvey, C.H. Jackman and A.E.S Green 1975 Phys. Rev.A 12(4) 1144–1152
- [2] A.E.S. Green A 1973 Advances in Quantum Chemistry vol 7) ed. P.O. Löwdin (Academic Press) 221.
- [3] K. Tőkési et al., (1994). Nucl Instrum. Methods Phys. Res. B: Beam Interact. Mater. At. 86, 201

Presenting Author

Károly Tőkési

Presenting Author Affiliation

Institute for Nuclear Research

Presenting Author Gender

Male

Country

Hungary

Presenting Author Email Address

tokesi@atomki.hu

Primary author: Prof. TOKESI, Karoly (Institute for Nuclear Research)

Presenter: Prof. TOKESI, Karoly (Institute for Nuclear Research)

Session Classification: Poster Session

