

Transport properties drawn from ion-atom collisions. Case of ${}^6\text{Li}-{}^6\text{Li}^+$ and ${}^6\text{Li}-{}^7\text{Li}^+$

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This investigation treats quantum mechanically the ion-atom collisions and computes the transport coefficients, such as the coefficients of mobility and diffusion. For the case of lithium, the calculations start by determining the *gerade* and *ungerade* potential curves through which ionic lithium approaches ground lithium. Then, by considering the isotopic effects and nuclear spins, the elastic and charge-transfer cross sections are calculated for the case of ${}^6\text{Li}^+$ and ${}^7\text{Li}^+$ colliding with ${}^6\text{Li}$. Finally, the temperature-dependent diffusion and mobility coefficients are analyzed, and the results are contrasted with those obtained from literature.