

## INTERACTION OF IONS WITH DRIFT-CURRENT BIASED SUPPORTED GRAPHENE

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**Abstract.** In our previous publications we studied the electron energy loss function (EELS, Despoja et al. 2017) and calculated the stopping force acting on a charged particle moving parallel to a graphene-insulator-graphene composite system (Kalinić et al. 2022). In this work we investigate the EELS and evaluate the stopping force on a charged particle moving parallel to a graphene layer biased with a drift electric current supported by an insulating substrate. The dielectric function of the system is expressed in terms of the bulk dielectric function of the substrate and the response function of graphene. Focusing on the range of frequencies from THz to mid-infrared, the response function is written in terms of a frequency-dependent conductivity of graphene (Despoja et al. 2017). The conductivity with the drift current is connected with the conductivity with no drift by using the Galilean Doppler shift model (Morgado et al. 2017 and 2019). The EELS (the imaginary part of the negative value of the inverse dielectric function) and the stopping force (the dissipative force which opposes the particle's motion) are presented in the cases without and with drifting electrons. The stopping force is also calculated when the drift and particle velocities have the same and opposite signs.

### References

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