Solid State Physics

F 3028

Calculation of electronic band structures

Project

For this project you will reproduce the results for the first two models presented in the work of R. L. Pavelich [1]. You will work in teams and will report the results in a brief document (LaTeX) together with the code used to generate the numerical data. Have fun!

References

[1] R. L. Pavelich and F. Marsiglic, *Calculation of 2D electronic band structure using matrix mechanics*, Am. J. Physics, **84**, 924 (2016)

[2] A. H. Castro Neto, F. Guinea, N. M. R. Peres, K. S. Novoselov, A. K. Geim, *The electronic properties of graphene*, Rev. Mod. Phys. **81**, 109 (2009)

[3] S. Reich, J. Maultzsch, C. Thomsen, P. Ordejón, *Tight-binding description of graphene*, Phys. Rev. B, **66**, 035412 (2002)

[4] N. W. Ashcroft and N. D. Mermin, *Solid State Physics* (Cengage Learning, 2011)