QUANTUM SCATTERING ON VORTICES IN NANOPHYSICS

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Conical space emerges inevitably as an outer space of any topological defect of the vortex type. Quantum-mechanical scattering of a nonrelativistic particle by a vortex centred in conical space is considered, and effects of the transverse size of the vortex are taken into account. In nanophysics, one deals with topological defects (disclinations) in graphene -- strictly two-dimensional layer of carbon atoms. A disclination warps a sheet of graphene, rolling it into a nanocone with the deficit angle which can take both positive and negative values that are equal to multiples of 60°. We discuss some peculiarities of the high-frequency scattering which are due to the nonvanishing deficit angle.