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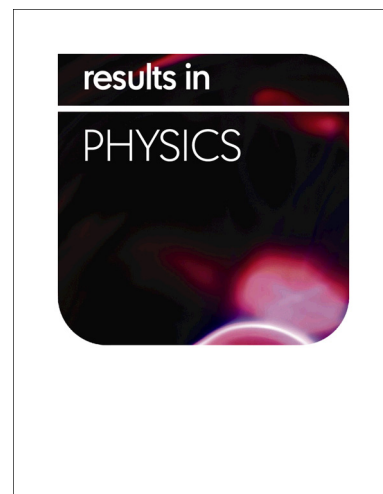
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Topological vortices in gauge models of graphene

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Abstract

Graphene-like structure possessing the topological vortices and knots, and the magnetic flux of the vortices configuration quantized, are proposed in this paper. The topological charges of the vortices are characterized by Hopf indices and Brower degrees. The Abelian background field action (BF action) is a topological invariant for the knot family, which is just the total sum of all the self-linking numbers and all the linking numbers. Flux quantization opens the possibility of having Aharonov-Bohm-type effects in graphene without external electromagnetic field.

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