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Planar surfaces of point dipoles as a platform for 2d magnetic structure research

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Our system consists of planar magnetic structures created by the assembly of point dipoles. The departure point of this work is the known degeneracy of ground states in planar square and triangular packings. The square lattice has a particularly interesting antiferromagnetic ground state exhibiting a transformation from percolating antiferromagnetic chains of dipoles pointing head-tail to a remarkable magnetic vortex configuration [1]. We follow the breakup of degeneracy observed in planar square and triangular packings with a mismatch of the orientation of stacked lattices. We further investigate the ability of these surfaces to carry spin current and manifest the magnetoelectric effect [2].

References

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