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The magnetism in graphene under strain YI CHEN CHANG, STEPHAN HAAS, University of Southern California, COMPUTATIONAL CONDENSED MATTER THEORY GROUP TEAM —
We theoretically study the magnetic features in graphene dot under mechanical deformation using the mean field Hubbard model. The edge local magnetic moment (ELMM) is considerably modified in accordance with an effective quantum well originating from a strain-induced gauge field. Applying a uniaxial strain along the zigzag or armchair directions enhances or dampens the ELMM due to the development of the edge quantum wells. Whereas a circular arc bending deformation is applied, the inner and outer edge display ELMM caused by nonuniform gauge field, a direct consequence of the presence of the bulk localized states. These states suggest that an effective single well potential is introduced by a nonuniform pseudo-magnetic field.

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