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Effects of spin-orbit interaction on a triangular lattice potential patterned two-dimensional electron gas CHON-SAAR CHU, WIE-LIN SU, RONGSING CHANG, Department of Electrophysics, National Chiao Tung University, Hsinchu 30010, Taiwan — We have studied theoretically the electronic states of a two-dimensional electron gas (2DEG) in the presence of a triangular lattice of muffin-tin potentials. In particular, spin-orbit interaction due to the in-plane potential gradient is included. At the $K$and K' points in the Brilluoin zone, the Dirac cones open up a gap and their respective Berry curvatures are of the same sign which, in turn, depends on the electron spin. This contrasting feature, from that of graphene, is related to the fact that inversion symmetry is preserved in our case. The system thus exhibits Z_2 physics.

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