

# Enhancement of spin-orbit coupling in doped graphene

Akhmatov Z.A.<sup>1,2,3,@</sup> and Akhmatov Z.A.<sup>1,3,4</sup>

<sup>1</sup> Institute of Applied Mathematics and Automation of the Kabardino-Balkar Scientific Center of the Russian Academy of Sciences, Shortanova 89a, Nalchik, 360000, None

<sup>2</sup> Institute for Nuclear Research of the Russian Academy of Science, Prospekt 60-letiya Oktyabrya 7a, Moscow, 117312, None

<sup>3</sup> Kabardino-Balkarian State University, Chernyshevskogo Street 173, Nalchik, 360004, None

<sup>4</sup> Vladikavkaz Scientific Centre of the Russian Academy of Sciences, Markus 22, Vladikavkaz, 362027, None

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Using first-principles calculations, the possibility of enhancing the SOC in graphene due to its doping by cadmium and tellurium atoms has been shown. For the  $CdC_{15}$  structure, the spin splitting value was  $E_{SOC} = 0.23$  eV. Co-doping of graphene by cadmium and tellurium leads to a lower spin-orbit splitting value  $E_{SOC} = 0.08$  eV. At a low concentration of doped atoms, as in the case of the  $CdC_{31}$  structure, splitting of graphene energy levels is not observed. In conclusion, we note that the enhancement of SOC in graphene and a sufficiently large band gap induced by doped atoms is an important factor for the creation of a 2D topological insulator based on graphene operating at room temperatures [1].

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