

# Enhanced thermoelectric currents in graphene with impurities

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We consider theoretically the thermoelectric phenomena in graphene with impurities. For appropriate impurity potential one finds localized resonance states at the Fermi level (or in its close vicinity). It is shown that such impurity-induced resonant states have a significant influence on the conventional Seebeck effect and thermoelectric efficiency (figure of merit). Thermoelectrically-induced spin and charge currents in graphene with impurities that locally enhance Rashba spin-orbit coupling is also considered. We have found that such impurities strongly enhance the Seebeck and spin Seebeck coefficients in the vicinity of the spin-orbit resonance states.