Abstract Submitted
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Magneto-plasmonic terahertz resonances in patterned graphene metasurfaces[1] JEAN-MARIE POUMIROL, University of Geneva, PETER LIU, ETH Zurich, MICHELE TAMAGNONE, Ecole polytechnique fdrale de Lausanne, TETIANA SLIPCHENKO, LUIS MARTIN-MORENO, Universidad de Zaragoza, JUAN MOSIG, Ecole polytechnique fdrale de Lausanne, JEROME FAIST FAIST, ETH Zurich, ALEXEY B. KUZMENKO, University of Geneva — When the time reversal symmetry is broken by a magnetic field, graphene displays strong non-reciprocal magneto-optical effects in the terahertz range such as magnetic circular dichroism and the Faraday rotation. Here we demonstrate that both these effects can be tuned over a large portion of the THz range due to strong magneto-plasmonic resonances that appear in patterned graphene. We studied different patterned types of graphene metasurfaces, such as periodic arrays of anti-dots, squares and metal-ring resonators. Importantly, the frequency and the intensity of the resonances can be efficiently controlled by electrostatic doping. Overall, combining this plasmonic control with magnetic and electronic biasing demonstrated that that non-reciprocity in graphene can be modulated and tuned at frequencies well beyond the cyclotron resonance in unpatterned graphene samples.

[1]Graphene Flagship

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