

Abstract Submitted
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A magnetized quantum wire can act as an optical amplifier MANVIR S. KUSHWAHA, Rice University — We focus on the magnetoplasmon excitations investigated in a quantum wire characterized by a confining harmonic potential and subjected to a perpendicular magnetic field. Essentially, we embark on the device aspects of the intersubband collective (magnetoroton) excitation which observes a negative group velocity between the maxon and the roton. The computation of the gain coefficient suggests an interesting and important application: the electronic device based on such magnetoroton modes becomes capable of amplifying a small optical signal of definite wavelength [J. Appl. Phys. **109**, 106102 (2011)].

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