Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

localization of plasmonic excitations in graphene induced by nanoscale potential JUNG-JUNG SU, Theoretical Div., Los Alamos Natl. Lab., HARI DAHAL, American Physical Society, RODRIGO MUNIZ, STEPHAN HAAS, Dept. of Phys. and Astro., Univ. of Southern California, ALEXANDER V. BALATSKY, Theoretical Div., Los Alamos Natl. Lab. — The near-ballistic transport property at close to room temperature makes graphene a strong candidate for integrated nanoelectronic application. Graphene-based plasmonics is one of the devices proposed that integrate electronic and light transport. By utilizing localized plasmonic excitation, plasmonics can transport light with a sub-wavelength dimension. We report our calculation on plasmonic excitation induced by different local structures. The polarization obtained by random-phase-approximation (RPA) is diagonalized to extract plasmon modes. We have also studied the effect due to gating and due to tunning of local potential structure geometry. These prediction can be tested by scanning tunneling microscope and is important both in fundamental and in application aspects.

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Date submitted: 30 Dec 2010 Electronic form version 1.4