Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Asymmetry in optical absorption spectra of 2D metal dichalcogenides DEEPIKA SAINI, RAMAKRISHNA PODILA, APPARAO RAO, Clemson University — Two dimensional (2D) inorganic materials have recently been shown to exhibit interesting optical phenomena that are strikingly different from their bulk counterparts. For example, exfoliated dichalcogenides exhibit an increased absorption and photoluminescence due to a change in the nature of its bandgap, i.e. a transition from an indirect to a direct bandgap. We find that the bandgap transitions in MoS_2 and WS_2 in the UV-VIS regime are invariably accompanied by an asymmetric Briet-Wigner-Fano lineshape. In this talk we will discuss the origin of Fano lineshape in terms of phonon scattering and changes in the electronic band structure.

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Date submitted: 15 Nov 2013 Electronic form version 1.4