Abstract Submitted for the MAR15 Meeting of The American Physical Society

Plasmon Excitations for a Linear Assembly of Metallic Spheres BO GAO, LIUBOV ZHEMCHUZHNA, Hunter College, CUNY, ANDRII IUROV, University of New Mexico and Hunter College, CUNY, GODFREY GUMBS, Hunter College, CUNY and Donostia International Physics Center (DIPC), DANHONG HUANG, Air Force Research Laboratory, Space Vehicles Directorate — We present a general formalism for calculating the Coulomb excitations of a linear array of interacting electron gases confined to the outside surfaces of three spherical shells. The response of these incompressible 2D electron gases to an external electromagnetic field results in charge density oscillations whose anisotropy with respect to the axis of quantization will be discussed. The dependence of the frequency of the plasma oscillations on the radius of the spheres as well as their separation has been a subject of our investigation and detailed results will be presented. We provided complete numerical results for the plasmon excitation of such system and concluded that the plasmon demonstrate quite different behavior from the earlier considered case of a S2DEG triad - they are not symmetric on the sign of each potential element for z-alignment and the interaction of the two far-removed spheres is no longer negligible.

> Bo Gao Hunter College, CUNY

Date submitted: 27 Oct 2014

Electronic form version 1.4