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Plasmon Excitations in a Triad of Coulomb-coupled spherical shells BO GAO, Hunter College CUNY, GODFREY GUMBS, Hunter College CUNY and Donostia International Physics Center (DIPC), San Sebastian, Spain , ANTONIOS BALASSIS, Fordham University, New York, ANDRII IUROV, Hunter College CUNY, DANHONG HUANG, Air Force Research Laboratory — Plasmon modes for a bundle of three spherical of two-dimensional electron gases (S2DEG's) have been obtained within the random-phase approximation (RPA). The intersphere Coulomb interaction matrix elements and their symmetry properties were also investigated in detail. The case of a bundle gives an adequate picture of the way in which the Coulomb interaction depends on orbital angular momentum quantum number L and its projection M . We concluded that the interaction between the S2DEG's aligned at an angle of 45^0 with the axis of quantization is negligible compared to the interaction along and perpendicular to the quantization axis. Consequently, the plasmon excitation frequencies reveal an interesting orientational anisotropic coupling to an external EM field probing the charge density oscillations.

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