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Static polarizability of a planar nanocluster: finite-size effect[1] ZACHARY BOND, HYE-YOUNG KIM, Department of Chemistry and Physics, Southeastern Louisiana University, LA 70402, COMPUTATIONAL AND THEORETICAL PHYSICS TEAM — One of the persistent scientific interests in nanotechnology has been that at what size and how would the atomic properties progress into those of a bulk material. In this presentation, we report recent results on how the static polarizability of a two-dimensional cluster progresses as its size increases. For finite size clusters, we use a microscopic method that involves all many-body interactions self-consistently. These numerical results of finite-size clusters will be analyzed by comparing to those of infinite-size clusters obtained from analytic methods. It is found that the size that reaches to the limit value of the infinite-size is surprisingly not so large. Also found are interesting characteristics of alternating directions and fluctuating magnitudes of the local polarizabilities within the cluster as we increase the size systematically.

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