

Abstract Submitted
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Van der Waals Forces in Quasi 1-D Structures DAVID DROSDOFF,
LILIA WOODS, University of South Florida — Analytical formulations of Van der
Waals-Casimir forces in terms of the macroscopic response of the system have been
done extensively for 2-D and 3-D systems. On the other hand, quasi 1-D materials
have been studied less, in part because of the difficulty in solving the boundary
conditions. In this talk, by using the RPA method, we present a formulation of
the Van der Waals force in narrow infinitely long ribbons. This approach is applied
in the quantum mechanical and thermal regimes to several typical systems, such
as insulators, metals, and semiconductors. Novel results are found for graphene
nanoribbons, for which a transition from quantum mechanical to thermal van der
Waals force can be realized at room temperature by changing the chemical potential.

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