

Abstract Submitted
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Evaluation of dispersion interactions in general geometries ANTHONY MAGGS, CNRS-ESPCI, PASQUALI SAMUELA, IBPC-Paris 7 — Dispersion interactions are very often approximated by pairwise van der Waals interactions between molecules. In dense media, however, there are important corrections due to the many-body nature of fluctuations. These many-body forms can be calculated in closed form in the simplest of geometries using the methods of Casimir and Lifshitz. Here we study dispersion interactions between bodies in general geometries. We map the calculation of the partition function onto a determinant which we discretize and evaluate with the help of Cholesky factorization. We study the efficiency of the factorization in two and in three dimensions and conclude that accuracies of the order of one per cent are readily achieved in the total interaction energy. We compare the approximations of pairwise additivity and proximity force with our numerical methods.

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