

## Computation of universal scaling functions of critical Casimir forces using Monte Carlo simulations

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Effective Casimir forces induced by thermal fluctuations in the vicinity of bulk critical points are studied by means of Monte Carlo simulations. The critical Casimir force in a slab of thickness  $L$  scales as  $\beta f_{Cas}(T, L) = L^{-d} \theta_{Cas}(L/\xi)$  where  $\theta_{Cas}(L/\xi)$  is a universal scaling function and  $\xi$  is the bulk correlation length.

A new numerical method based on an integration scheme of free energy differences is used to compute the universal scaling functions of the critical Casimir forces in the critical region. We consider Ising and XY universality classes in 3D systems with film geometries. Several surface universality classes of the confining surfaces are considered, some of which are relevant for recent experiments. The results are compared with corresponding experimental data for wetting films of fluids as well as with other available theoretical results.