Finite Size Scaling of Melting in Two Dimensions KEOLA WIERSCHEM, MARTECH and Physics Department, Florida State University, EFSTRA-TIOS MANOUSAKIS, MARTECH and Physics Department, FSU and Physics Department, University of Athens, Greece — We study the melting transition of a two-dimensional Lennard-Jones fluid using classical Monte Carlo simulation techniques. We perform a finite-size scaling analysis within the context of the KTHNY theory of melting, which expects melting to occur via a two-stage process, with separate transitions for translational and orientational order. Careful attention is paid to the fact that there are two order parameters, and the behavior of their correlation lengths across the transition region.

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