



ERRATUM

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Erratum

A numerical renormalization group study of laser-induced freezing

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PACS. 64.70.Dv – Solid-liquid transitions.

PACS. 64.60.Ak – Renormalization-group, fractal, and percolation studies of phase transitions.

PACS. 82.70.Dd – Colloids.

Subsequent to the publication of our paper, we discovered a small numerical error in the elastic moduli which changes the calculated phase diagram (fig. 1). The recalculated phase diagram and the renormalization flow diagram (fig. 4) are reproduced below. We now have excellent agreement with earlier simulation results of ref. [7]. This validates both our method and the quantitative predictions of ref. [5].

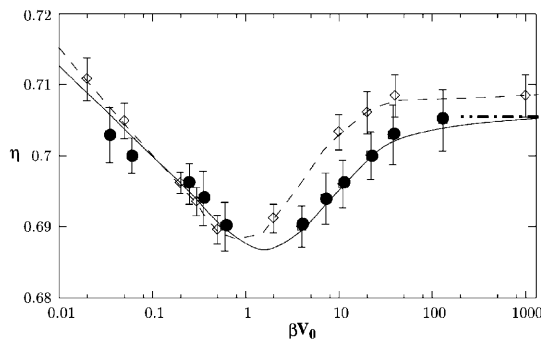


Fig. 1

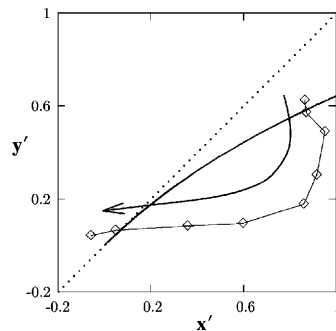


Fig. 4

Fig. 1 – The phase diagram of the hard-disk system in the presence of a 1d, commensurate, periodic potential in the packing fraction (η) - potential strength (βV_0) plane. The lines in the figure are a guide to the eye. The dashed line denotes earlier Monte Carlo simulation results [7] and the solid line is calculated through our numerical renormalization group study. The dash-dotted line at $\eta \simeq 0.705$ denotes the calculated asymptotic phase transition point at $\beta V_0 = \infty$.

Fig. 4 – The initial values of x' and y' obtained from the elastic moduli and dislocation probability at $\eta = 0.7029$ plotted in the (x', y') -plane. The line connecting the points is a guide to eye. The arrow shows the direction of increase in $\beta V_0 (= 0.01, 0.04, 0.1, 0.4, 1, 4, 10, 40, 100)$. The dotted line denotes the separatrix ($y' = x'$) incorporating upto the leading-order term in KT flow equations. The solid curve is the separatrix when next-to-leading-order terms are included. In $l \rightarrow \infty$ limit, any initial value below the separatrix flows to $y' = 0$ line whereas that above the separatrix flows to $y' \rightarrow \infty$. The intersection points of the line of initial values with the separatrix gives the phase transition points. The plot shows a freezing transition at $\beta V_0 = 0.035$ followed by a melting at $\beta V_0 = 38$.

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