Clusterization of defects and crystallites in a 2D Yukawa liquid

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Various properties of solid-like clusters (i.e., clusters consisting of particles with six nearest neighbors) in a two dimensional Yukawa liquid have been considered for the first time in a wide temperature range starting from the melting temperature [1] . With increasing temperature, the concentration of crystal particles (which noticeably prevail in a melt) decreases slowly, while the defect concentration increases, which results in the formation of large clusters consisting of defects and in the degradation of large crystal clusters in the considered two-dimensional system. Their characteristic size and shape change drastically in a narrow temperature range. The comparative analysis of crystal clusters and clusters consisting of topological defects has been performed. Finally, we discuss how universal the clusters properties of dense 2D liquids are.

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