

MULTI-STEP RADIAL MELTING IN SMALL TWO-DIMENSIONAL CLASSICAL CLUSTERS.

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We report a molecular dynamics study of small classical two-dimensional clusters with ring-like configurations [1-3]. We present a detailed investigation of the particles motion of small clusters as a function of temperature before any jumps between shells occur and thus before the radial melting sets in. Our results were compared with the previous ones, done with the use of Monte Carlo simulation method [1]. In this work we found that the melting process of two-dimensional classical cluster is much richer than presented till now. It is shown that in magic number configurations a local radial melting of sub-shells occur, which is related to the intershell rotation.

[1] V. M. Bedanov and F. M. Peeters, Phys. Rev. B **49**, 2667 (1994),

[2] V. A. Schweigert and F. M. Peeters, Phys. Rev. B **51**, 7700 (1995),

[3] Minghui Kong, B. Partoens, and F. M. Peeters, Phys. Rev. E **67**, 021608 (2003).

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9.7 cm