

Abstract Submitted  
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**A new solution to the statistics of hard elongated objects** MOHAMMAD H. ANSARI, Institute for Quantum Computing, IQC and University of Waterloo — We propose a formalism that helps to study elasticity of hard elongated objects (e.g. needles, rectangles, ellipses, etc) analytically. For this aim, we introduce an approximation to the exact model that simplifies the Gibbs free energy to be solved analytically and then extract some formulations for a collective number of Gibbs related physical quantities. Interestingly, this formalism reproduces the numerical results of the exact model. The simplicity and the accuracy of this formalism allows to study some previously unknown properties of of elongated objects in different compressions, such as the elasticity coefficients of objects with curved boundary shapes. Moreover we introduce a new quantity, i.e. the mean inverse distance, and investigate how it behaves under different compressions.

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