سمینارهفتگی گروه ماده چگال نرم

# Cluster formation, surface tension and intermonolayer friction of protein-embedded membranes

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Lipid membranes are the main building blocks of cells in living beings. Besides playing the role of an envelope for the cell itself, it is a major ingredient in many organelles inside the cell, important of which is the Golgi complex that mediates the synthesis of biological macromolecules. The most vital property of this kind of membrane is the ability to adopt a great variety of shapes and curvatures. Cell membranes consist of lipids and proteins basically, and it is believed that membrane curvature is determined by the interactions between these two kinds of molecules. In this work, we use molecular dynamics to simulate membranes with embedded proteins based on a coarse-grained model. Clustering of proteins is a frequent process which is vital for signaling, polarization and membrane fusion. The mechanisms that facilitate this phenomenon are discussed. It is also shown that the existence of proteins in a membrane increases the membrane tension. Intermonolayer friction coefficient is calculated for different models and the effects of the surface tension and molecule lengths on the friction are investigated.

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**مکان**: آمفی تئاتر دانشکده فیزیک

قطب ماده چگال و سیستمهای پیچیده