سمینار هفتگی ماده چگال نرم

Percolation transition in phase separating active fluid

Abstract

The motility-induced phase separation exhibited by active particles with repulsive interactions is well known. We show that the interaction softness of active particles destabilizes the highly ordered dense phase, leading to the formation of a porous cluster which spans the system. This soft limit can also be achieved if the particle motility is increased beyond a critical value, at which the system clearly exhibits all the characteristics of a standard percolation transition. We also show that in the athermal limit, active particles exhibit similar transitions even at low motility. With these additional new phases, the phase diagram of repulsive active particles is revealed to be richer than what was previously conceived.

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