

Fluid-mediated interactions between colloids in bulk and under confinement

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The behaviour of colloids can be effectively controlled by tuning the solvent-mediated interactions among them. An extensively studied example is the temperature-induced aggregation of colloids in the vicinity of solvent's criticality. In this talk, I will briefly describe the physics of such colloid-colloid interactions in bulk systems [1], and we will discuss how the interactions are modified in the presence of a surface and in confinement [2]. I will demonstrate strong *non-additivity* of solvent-mediated interactions and show how it affects the colloidal phase behaviour. I will also discuss the formation of capillary bridges between colloids and the accompanying bridging phase transitions [3]. In addition, I will describe an interface localization-delocalization transition, which may occur in a two-phase fluid confined into a slit, and will show how colloids can help to detect it [4].

References

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