

Existence of capillary constant mean curvature disks in R^3

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Given a surface S in R^3 diffeomorphic to the sphere, a classical question is to prove the existence of disk-type surfaces with constant mean curvature whose boundary meets S at a constant angle, the value of the mean curvature and that of the contact angle both being prescribed. Such boundary value problems originated from the study of capillary phenomenon and have a simple variational description in terms of areas and volumes. In this talk, I will report on recent progress on the existence question where we refine Struwe's foundational work (1988) on this subject, and partially generalize it to contact angles other than $\pi/2$.

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