

"Obstructions vs. (Gluing) Constructions for Minimal Surfaces & Mean Curvature Solitons"

Abstract: We consider two complementary aspects of the theory of minimal surfaces and the closely related self-similar solitons (i.e. singularity models) in mean curvature flow: Non-existence and uniqueness results vs. existence results. The obstructions to existence rely mostly on maximum principle arguments, while the existence comes about constructively via gluing techniques. Focusing on the latter, I will explain general methodology, and detail some of the technicalities involved in some recent existence theorems: Mean curvature solitons with genus and, in other recent work, examples of non-compactness in the moduli space of minimal surfaces. An interesting feature is tracking at the nonlinear PDE's level when and how the gluing manages to avoid the obstructions. (Some of these results are joint w/ Kleene and/or Kapouleas.)
