Geometry Webinar AmSur/AmSul

Mean curvature flow solitons in warped product spaces

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Resumo: In this lecture we establish a natural framework for the study of mean curvature flow solitons in warped product spaces. Our approach allows us to identify some natural geometric quantities that satisfy elliptic equations or differential inequalities in a simple and manageable form for which the machinery of weak maximum principles is valid. The latter is one of the main tools we apply to derive several new characterizations and rigidity results for MCFS that extend to our general setting known properties, for instance, in Euclidean space. Besides, as in Euclidean space, MCFS are also stationary immersions for a weighted volume functional. Under this point of view, we are able to find geometric conditions for finiteness of the index and some characterizations of stable solitons. The results of this lecture have been obtained in collaboration with Jorge H. de Lira, from Universidade Federal do Ceará, and Marco Rigoli, from Università degli Study di Milano, and they can be found in the following papers:

[1] Luis J. Alías, Jorge H. de Lira and Marco Rigoli, Mean curvature flow solitons in the presence of conformal vector fields, The Journal of Geometric Analysis 30 (2020), 1466-1529.

[2] Luis J. Alías, Jorge H. de Lira and Marco Rigoli, Stability of mean curvature flow solitons in warped product spaces. To appear in Revista Matemática Complutense (2022).