Topics in Geometric Analysis



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Delayed parabolic regularity for curve shortening flow

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Linear parabolic PDEs like the heat equation have well-known smoothing properties. In reasonable situations we can control the C^k norm of solutions at time t in terms of t and a weak norm of the initial data. This idea often carries over to nonlinear parabolic PDEs such as geometric flows. In this talk I will discuss a totally different phenomenon that can occur in some natural situations, in which there is an explicit magic positive time before which we have no regularity estimates at all, but after which parabolic regularity is switched on and we obtain full regularity. I plan to focus on the case of curve shortening flow, which will mean that almost no prerequisites will be assumed.

Joint work with Arjun Sobnack.

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