

## Frobenius theorem for weak submanifolds

*Tuesday, July 5, 2022 11:30 AM (1 hour)*

The question of producing a foliation of the  $n$ -dimensional Euclidean space with  $k$ -dimensional submanifolds which are tangent to a prescribed  $k$ -dimensional simple vectorfield is part of the celebrated Frobenius theorem: a decomposition in smooth submanifolds tangent to a given vectorfield is feasible (and then the vectorfield itself is said to be integrable) if and only if the vectorfield is involutive. In this seminar I will summarize the results obtained in collaboration with G. Alberti, A. Merlo and E. Stepanov when the smooth submanifolds are replaced by weaker objects, such as integral or normal currents or even contact sets with “some” boundary regularity. I will also provide Lusin-type counterexamples to the Frobenius property for rectifiable currents. Finally, I will try to highlight the connection between involutivity/integrability à la Frobenius and Carnot–Carathéodory spaces and how to apply our techniques in this framework.

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