Research project

Guy Bouchitté and Adolfo Arroyo-Rabasa

The purpose of this short visit of Guy Bouchitté to the "Centro di Ricerca Matematica Ennio De Giorgi" is to continue joint works in progress.

[1] The main purpose concerns a joint paper with Prof A. Arroyo-Rabasa about different notions of tangent space to a measure μ in $\mathbb{R}^d$. We recently discovered that the tangent bundle T_μ introduced by G.Bouchitté and all in order to characterize the completion of balanced signed measures with respect to the Monge-Kantorovich norm coincides with the differentiability bundle D_μ introduced by Alberti-Marchese to derive an optimal μ- version of the Rachemader theorem for Lipschitz functions.

Following our variational approach, we are able to obtain a very simple proof of the flat chain conjecture of L.Ambrosio and B. Kirchheim (2000) in the case of 1-dimensional currents. We expect to be able to complete the preprint during this period. In a second step, we would like to make progress towards proving (or disproving) the flat chain conjecture for k-currents $(1 < k < d)$.

[2] A second purpose would be to discuss new perspectives on the (still open) vanishing mass conjecture . This will be a very nice opportunity to share discussions with Giovanni Alberti who recently gave lectures dedicated to this topic.

[3] In the line of previous works in collaboration with G. Buttazzo, Th Champion, L. De Pascale and U. Bindini ([A], [A], [A]), partially realized during the former stay of G. Bouchitté at CRM (UMI Fibonnacci, 2019) , a new paper is currently in progress. Several meetings with G. Buttazzo could be organized to get a final version of the preprint.