A Di Perna-Lions Theory on Wiener Spaces

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In [DL89], R.J. DiPerna and P.-L. Lions first proved that Sobolev regularity for vector fields in \mathbb{R}^n (with bounded divergence) is sufficient to establish existence, uniqueness and stability of a generalized notion of flow, consisting of a suitable selection among the trajectories of the associated ODE: later on, the important case of BV fields was settled by L. Ambrosio, in [Amb04].

In this seminar we will introduce and motivate the infinite dimensional counterparts of these results, in the setting of abstract Wiener spaces, as developed in [AF09] (Sobolev fields) and in [Tre13] (BV fields).

References

- [AF09] L. Ambrosio and A. Figalli, On flows associated to Sobolev vector fields in Wiener spaces: an approach à la DiPerna-Lions, J. Funct. Anal. 256 (2009), no. 1, 179–214. MR 2475421 (2009k:35019)
- [Amb04] L. Ambrosio, Transport equation and Cauchy problem for BV vector fields, Invent. Math. 158 (2004), no. 2, 227–260. MR 2096794 (2005f:35127)
- [DL89] R. J. DiPerna and P.-L. Lions, Ordinary differential equations, transport theory and Sobolev spaces, Invent. Math. 98 (1989), no. 3, 511–547. MR 1022305 (90j:34004)
- [Tre13] D. Trevisan, Lagrangian flows driven by BV fields in Wiener spaces, ArXiv e-prints (2013).