

# Sobolev estimates in the JKO scheme

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In a recent paper with *G. De Philippis, A. Meszaros and B. Velichkov* we found a new inequality related to optimal transport, which I personally call “five-gradients-inequality”, 5GI. In this talk I will show how to use this inequality, initially only applied to BV estimates, to prove some sort of  $W^{1,p}$  estimates on the solutions of the JKO scheme for the linear Fokker-Planck equation and for some non-linear equations (yet, the use of linear diffusion seems crucial) with possibly non-local terms, including the Keller-Segel system for chemotaxis.

*This is joint work with our post-doc S. Di Marino.*

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