1151-35-216   **Didier Bresch**, **Pierre-Emmanuel Jabin** and **Zhenfu Wang*** (`zwang423@math.upenn.edu`).
On mean field limit and quantitative estimates with a large class of singular kernels: application to the Patlak-Keller-Segel Model.

We propose a new relative entropy combination of the methods developed by P.-E. Jabin and Z. Wang [Inventiones (2018)] and by S. Serfaty [Proc. Int. Cong. of Math, (2018) and references therein] to treat more general kernels in mean field limit theory. This new relative entropy may be understood as introducing appropriate weights in the relative entropy developed by P.-E. Jabin and Z. Wang (in the spirit of what has been recently developed by D. Bresch and P.-E. Jabin [Annals of Maths (2018)]) to cancel the more singular terms involving the divergence of the flow. As an example, a full rigorous derivation (with quantitative estimates) of the Patlak-Keller-Segel model in some subcritical regimes is obtained. Our new relative entropy allows also to treat singular potentials which combine large smooth part, small attractive singular part and large repulsive singular part. (Received August 19, 2019)