MEAN-FIELD LIMITS FOR SINGULAR FLOWS

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We discuss the derivation of PDEs as limits as N tends to infinity of the dynamics of N points for a certain class of Riesz-type singular pair interactions. The method is based on studying the time evolution of a certain "modulated energy" and on proving a functional inequality relating certain "commutators" to the modulated energy. When additive noise is added, in dimension at least 3 a uniform in time convergence can even be obtained. Based on joint works with Hung Nguyen, Matthew Rosenzweig.