Strong-Trajectorial approximation $2D$ -Navier Stokes by stochastic particle systems with moderate interaction

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Abstract. We consider an interacting particle system modeled as a system of N stochastic differential equations driven by Brownian motions with moderate interaction. We prove that the empirical process (mollifiers) converges, uniformly in the space variable, to the solution of the 2D-Navier Stokes Equation written in vorticity. We justify the convergence of the numerical method proposed by Chroin for the case the particle systems with moderate iterations.