Layer Methods for Navier-Stokes Equations with Additive Noise

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A number of layer methods for stochastic Navier-Stokes equations (SNSE) with spatial periodic boundary conditions and additive noise are proposed. The methods are constructed using conditional probabilistic representations of solutions to SNSE and exploiting ideas of the weak sense numerical integration of stochastic differential equations. Some convergence results for the proposed methods are proved. Results of numerical experiments on model problems are presented. The talk is based on a joint work with G.N. Milstein (Ural Federal University, Ekaterinburg, Russia).