

Acknowledgement of priority concerning the article “A probabilistic interpretation and stochastic particle approximations of the three dimensional Navier–Stokes equation” *Prob. Th. Rel. Fields.* **136:102–156 (2006)**

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Received: 20 June 2008 / Revised: 8 July 2008 / Published online: 28 August 2008
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It is claimed in the abstract of [2] that the results in that work “provide the first complete proof of convergence of a stochastic vortex method for the Navier–Stokes equation in three dimensions, and rectify the algorithm conjectured by Esposito and Pulvirenti in 1989.” The justification given for that claim was Remark 5.1 in [2], where I discuss why the well posedness of a nonlinear process considered in [1] seemed to me not possible to establish.

However, it has been pointed out to me by the authors of [1] that a standard Picard iterative procedure (see e.g. [3]) can be implemented for the existence and uniqueness of that process. Therefore, the model proposed in [1] is well posed and does not need to be modified with the extra cut-off proposed in [2]. The proof of the result stated in [1] is, consequently, complete, and the claim in the abstract of [2], so as Remark 5.1 and related phrases in the introduction therein, are hence not correct.

On the other hand, the results of [2] can be considered stronger in the sense that in [1], the mollifying parameters needed to obtain the convergence of the particle scheme towards the 3-D Navier–Stokes equation are random, and depending in some non explicit way on the sample paths of the driving Brownian motions. Moreover, in [2], the pathwise propagation of chaos property is established.

References

1. Esposito, R., Pulvirenti, M.: Three-dimensional stochastic vortex flows. *Maths. Methods Appl. Sci.* **11**, 431–445 (1989)
2. Fontbona, J.: A probabilistic interpretation and stochastic particle approximations of the three dimensional Navier–Stokes equations. *Prob. Theor. Rel. Fields.* **136**, 102–156 (2006)
3. Guikhman, I., Skorokhod, A.: *Introduction à la Théorie des Processus Aléatoires*. Moscow, U.S.S.R.: Mir (1986)

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