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A computational study of an interior layer in a fluid flow problem[†]

K. K. Mondal[1], **N. Madden**[2]

ABSTRACT

We study the problem of numerical simulation of the dispersion of fine particles in an oscillatory turbulent flow [1]. The model is based on the time-dependent advection-diffusion equation whose solution represents the concentration of particles over time and down-stream distances. At the in-flow boundary the particle concentration represents a discontinuity which is propagated through the domain as an interior layer.

Our primary goal is the resolution of the layer at various down-stream distances. Moreover, we would like to establish if there is good agreement between the numerical models and laboratory experiments.

References

[1] K. K. Mondal, B. S. Mazumder, Dispersion of fine settling particles from an elevated source in an oscillatory turbulent flow, European J. Mech. B/Fluids. 27 (2008) 707 - 725.

[1]Department of Mathematics,
Alipurduar College, Jalpaiguri, West Bengal, India.
This research was conducted while visiting NUI Galway.
kkmondol@gmail.com

[2]School of Mathematics, Statistics and Applied Mathematics,
National University of Ireland, Galway,
Ireland.
Niall.Madden@NUIGalway.ie

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