Ashwin Vishnu Mohanan

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EDUCATION

KTH ROYAL INSTITUTE OF TECHNOLOGY
Ph.D. student in Geophysical Fluid Mechanics,
Linné Flow Centre
Oct 2014 - Present | Stockholm, SE

IIT KANPUR
M. Tech. in Aerospace Engineering (Aerodynamics)
Aug 2012 - May 2014 | Kanpur, IN
CPI: 9.58 / 10

LINKS

orcid:// 0000-0002-2979-6327
linkedin:// ashwinvishnu
bitbucket:// avmo
github:// ashwinvis

COURSEWORK

DOCTORAL
Geophysical Fluid Mechanics
Turbulence *(Teaching Asst)*
Advanced Compressible Flows

GRADUATE
Advanced Computational Fluid Mechanics
Aerodynamics
Transition and Turbulence
Theory of Vibration

SKILLS

PROGRAMMING
Over 5000 lines:
Shell • Python • Cython
Fortran 90 • LATEX

Over 1000 lines:
C • C++

Familiar:
Matlab • HTML • CSS

SCIENTIFIC
Numerical methods
Finite difference • Pseudo-spectral
Parallelization • PIV • Image processing

Analytical methods
Linear and Global stability analysis
Energy Spectra • Spectral energy budget
Structure functions

RESEARCH

WAVES AND VORTICES IN GEOPHYSICAL TURBULENCE
Ph.D. project
Oct 2014 – Present | Stockholm, SE
Supervisors: **Dr. Erik Lindborg** and **Dr. Pierre Augier**
- Study of energy cascade and interaction between wave and vortical modes in shallow-water turbulence
- Modified shallow-water equations to study shallow water turbulence sans shocks
- MILESTONE project: large PIV experiments to investigate mixing in stratified turbulence
- Core developer for **FluidDyn project**: open-source software suite for experiments, simulations and post-processing in fluid mechanics

MIXED CONVECTION INSTABILITIES WITH AND WITHOUT BOUSSINESQ APPROXIMATION
Graduate project
June 2013 – May 2014 | Kanpur, IN
Supervisor: **Prof. T. K. Sengupta**
- Study on the effect of heating on flow instabilities leading to transition in mixed convection regime for flow over a flat plate
- Investigated using DNS, linear stability theories and a newly developed energy based receptivity analysis
- Developed a code based on compressible NS equation to validate the above results in a variable density non-Boussinesq formulation

EXPERIENCE

GS E&C INDIA PVT. LTD.
Graduate Engineer Trainee (Piping)
July 2011 - June 2012 | Delhi NCR, IN

PUBLICATIONS

[1] V. M. Ashwin, K. Saurabh, M. Sriramkrishnan, P. Bagade, M. K. Parvathi, and T. K. Sengupta. Kdv equation and computations of solitons: Nonlinear error dynamics. *Journal of Scientific Computing*, 62(3):693–717, 2015.

[2] P. Augier, C. Bonamy, A. Campagne, and A. V. Mohanan. Fluidimage, a libre framework for scientific treatments of large sets of images. In *Congrès Francophone de Techniques Laser (CFTL)*, 2016.

[3] P. Augier, A. V. Mohanan, and E. Lindborg. Wave energy cascade in forced-dissipative one-layer shallow-water flows. *J. Fluid Mech. (To be submitted)*.

[4] A. Campagne, H. Alfredsson, R. Chassagne, D. Micard, N. Mordant, A. Segalini, J. Sommeria, S. Viboud, A. V. Mohanan, E. Lindborg, et al. First report of the milestone experiment: strongly stratified turbulence and mixing efficiency in the coriolis platform. In *VIIIth International Symposium on Stratified Flows (ISSF)*, 2016.

[5] E. Lindborg and A. V. Mohanan. A two-dimensional toy model for geophysical turbulence. *Physics of Fluids*, 29(11):111114, Nov. 2017.