

Kannabiran Seshasayanan

PERSONAL DATA

PLACE AND DATE OF BIRTH: Chennai, India — 13 March 1991
CURRENT ADDRESS: Department of Physics,
IIT Kharagpur,
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EDUCATION

JULY. 2020 - Now Asst. Prof in PHYSICS
IIT Kharagpur

SEPT. 2017 - JUNE 2020 Postdoc in PHYSICS/OCEANOGRAPHY
CEA Saclay
Advisor: Basile Gallet

OCT. 2014 - SEPT. 2017 Ph.D. in PHYSICS
École Normale Supérieure, Paris
Thesis: “Turbulent Rotating dynamos”
Advisor: Alexandros Alexakis

SEPT. 2013 - JUNE 2014 Masters in MACROSCOPIC PHYSICS AND COMPLEXITY
École Normale Supérieure, Paris
Thesis: “Critical Transitions in 2D MHD”
Advisor: Alexandros Alexakis
MARKS: 15.61/20

SEPT. 2012 - AUG. 2013 Masters in FLUID MECHANICS
École Polytechnique, Palaiseau
Thesis: “Modeling transition to turbulence
in Plane Couette flow” — Advisor: Paul Manneville
MARKS: 15.7/20

AUG. 2008 - JULY 2012 Undergraduate Degree in AEROSPACE ENGINEERING
Minor in *Physics*, **Indian Institute of Technology, Madras**
Thesis: “Stability analysis of double shear layer” — Advisor: Sameen A
GPA: 8.9/10.0

RESEARCH INTERESTS

INTERESTS : Non Linear Dynamics, Statistical Mechanics, Oceanography,
Turbulence, Magnetohydrodynamics, Geophysical fluid dynamics.

PUBLICATIONS

1. “On the edge of an Inverse Cascade”, **K. Seshasayanan**, S. J. Benavides & A. Alexakis, *PHYS. REV. E*, 90 051003(R) (2014).
2. “Laminar-turbulence patterning in wall-bounded shear flows: a Galerkin model”, **K. Seshasayanan** & Paul Manneville, *FLUID DYN. RES.*, 47, 3, 035512 (2015).
3. “Critical behavior in the inverse to forward energy transition in twodimensional magneto-hydrodynamic flow”, **K. Seshasayanan** & A. Alexakis, *PHYS. REV. E*, 93 013104 (2016).
4. “Turbulent 2.5-dimensional dynamos”, **K. Seshasayanan**, A. Alexakis, *J. FLUID MECH.*, 799, 246-264 (2016).
5. “Kazantsev model in non-helical 2.5-dimensional flows”, **K. Seshasayanan** & A. Alexakis, *J. FLUID MECH.*, 806, 627-648 (2016).
6. “The onset of turbulent rotating dynamos at the low magnetic Prandtl number limit”, **K. Seshasayanan**, V. Dallas, & A. Alexakis, *J. FLUID MECH. RAPIDS*, 822, R3 (2017).
7. “Transition to Turbulent Dynamo Saturation”, **K. Seshasayanan**, B. Gallet & A. Alexakis, *PHYS. REV. LETT.*, 119, 20, 204503 (2017).

8. “*Condensates in rotating turbulent flows*”, **K. Seshasayanan** & A. Alexakis, J. FLUID MECH., 841 434-462 (2018).
9. “*Growth rate distribution and intermittency in kinematic turbulent dynamos: Which moment predicts the dynamo onset?*”, **K. Seshasayanan** & F. Pétrélis, EUROPHYS. LETT., 122 64004 (2018).
10. “*Dynamo saturation down to vanishing viscosity: strong-field and inertial scaling regimes*”, **K. Seshasayanan** & B. Gallet, J. FLUID MECH., 864, 971–994 (2019).
11. “*Surface gravity waves propagating in a rotating frame: the Ekman-Stokes instability*”, **K. Seshasayanan** & B. Gallet, PHYS. REV. FLUIDS, 4, 104802 (2019).
12. “*Abrupt transitions of zonal jets in two-dimensional turbulent shear flow*”, V. Dallas, **K. Seshasayanan** & S. Fauve, PHYS. REV. FLUIDS, 5, 084610 (2020).
13. “*Onset of three-dimensionality in rapidly rotating turbulent flows*”, **K. Seshasayanan**, & B. Gallet, J. FLUID MECH. RAPIDS, 901, R5, (2020).
14. “*Bifurcations of a plane parallel flow with Kolmogorov forcing*”, **K. Seshasayanan**, V. Dallas & S. Fauve, ARXIV:2004.12418 (2020), SUBMITTED IN PHYS. REV. FLUIDS.
15. “*Phase transitions in turbulence and the multiplicative-noise universality class*”, A. Alexakis, S. J. Benavides, **K. Seshasayanan** & F. Pétrélis, SUBMITTED IN PHYS. REV. LETT. (2020).

TEACHING EXPERIENCE

FEB 2019 - APR 2019 Experimental methods in Fluid mechanics: 21 contact hours,
 JUN 2019 - JUL 2019 Boundary layer theory: 13 contact hours.

SCHOLARSHIPS

JUNE 2014 École Normale Supérieure Masters Scholarship, Paris, France
 AUG 2013 École Polytechnique Masters Scholarship, Palaiseau, France
 MAY 2009 - MAY 2012 ST Engineering Scholarship, Chennai, India
 MAY 2008 - MAY 2012 CBSE Scholarship, Chennai, India

INDUSTRIAL EXPERIENCE

MAY 2011-JULY 2011 Internship at ST AEROSPACE, Singapore
 Study and development of models for performance of CFM 56 jet engine.

COMPUTER SKILLS

Knowledge in : FORTRAN, C, C++, PYTHON, MATLAB, MATHEMATICA, LABVIEW,
 GERRIS, FREEFEM++, FLUENT, GAMBIT, LINUX, \LaTeX

LANGUAGES

TAMIL: Mother tongue
 ENGLISH: Fluent
 FRENCH: Fluent
 HINDI: Intermediate Knowledge

REFERENCES (COLLABORATORS)

ALEXANDROS ALEXAKIS CNRS researcher Laboratoire de Physique Statistique Ecole Normale Supérieure alexandros.alexakis@lps.ens.fr (+33)1 44 32 25 22	STEPHAN FAUVE Professor Laboratoire de Physique Statistique Ecole Normale Supérieure fauve@lps.ens.fr (+33)1 44 32 25 21
BASILE GALLET Research Engineer Service de Physique de l'Etat Condensé CEA Saclay basile.gallet@cea.fr (+33)1 69 08 41 03	FRANÇOIS PÉTRÉLIS CNRS Researcher/Professor Laboratoire de Physique Statistique Ecole Normale Supérieure petrelis@lps.ens.fr (+33)1 44 32 25 70

REFERENCES (NON-COLLABORATORS)

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