

# Kannabiran Seshasayanan

## PERSONAL DATA

---

PLACE AND DATE OF BIRTH: Chennai, India — 13 March 1991  
CURRENT ADDRESS: Department of Physics,  
IIT Kharagpur,  
Kharagpur, West Bengal 721302, India  
PHONE: +91 93600 28322  
EMAIL: Official - [kannabiran.s@phy.iitkgp.ac.in](mailto:kannabiran.s@phy.iitkgp.ac.in),  
Personal - [s.kannabiran@gmail.com](mailto:s.kannabiran@gmail.com)

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

## REFERENCES (NON-COLLABORATORS)

---

SÉBASTIEN AUMAITRE

Research Engineer

Service de Physique de l'Etat Condensé

CEA Saclay

[sebastien.aumaitre@cea.fr](mailto:sebastien.aumaitre@cea.fr)

(+33)1 69 08 74 37

STEVEN TOBIAS

Professor

Applied Math

University of Leeds

[smt@maths.leeds.ac.uk](mailto:smt@maths.leeds.ac.uk)

0113 343 5172

DARIO VINCENZI

CNRS Researcher

Laboratoire Jean Alexandre Dieudonné

Université Côte d'Azur

[dario.vincenzi@unice.fr](mailto:dario.vincenzi@unice.fr)

(+33) 4 89 15 05 26