

WAVES, INSTABILITIES AND TURBULENCE IN
GEOPHYSICAL AND ASTROPHYSICAL FLOWS
8-20 JULY 2019, CARGÈSE (FRANCE)

SCIENTIFIC PROGRAM

TUESDAY, JULY 9TH:

- 8:15 – 8:30 *Opening*
- 8:30 – 9:30 *Inertial Waves and Inertial Modes in Planets*, **NOIR Jerome**
- 9:30 – 10:00 **Coffee Break**
- 10:00 – 11:00 *Inertial Waves and Inertial Modes in Planets*, **NOIR Jerome**
- 11:00 – 12:00 *Quasigeostrophic theory—from stratified to unstably stratified domains*, **JULIEN Keith**
- 12:00 – 13:30 **Lunch**
- 13:30 – 15:30 *Fluid dynamos*, **FAUVE Stephan**
- 19:00 – 20:00 **Welcome drink**

WEDNESDAY, JULY 10TH:

- 8:30 – 9:30 *Internal Gravity Waves in Stellar Interiors*, **ROGERS Tamara**
- 9:30 – 10:00 **Coffee Break**
- 10:00 – 11:00 *Internal Gravity Waves in Stellar Interiors*, **ROGERS Tamara**
- 11:00 – 12:00 *Excitation of Internal Gravity Waves by Convection in Stars*, **LECOANET Daniel et al.**
- 12:00 – 13:30 **Lunch**
- 13:30 – 15:30 *Internal gravity waves in the ocean and the atmosphere*, **STAQUET Chantal**

THURSDAY, JULY 11TH:

- 8:30 – 9:30 *Fluid dynamos*, **FAUVE Stephan**
- 9:30 – 10:00 **Coffee Break**
- 10:00 – 11:00 *Fluid dynamos*, **FAUVE Stephan**
- 11:00 – 12:00 *Large-scale baroclinic and barotropic instabilities in planetary atmospheres*, **READ P.**
- 12:00 – 13:30 **Lunch**
- 13:30 – 13:50 *Turbulent stratified flows under ice shelves*, **COUSTON Louis-Alexandre**
- 13:50 – 14:10 *Shear instabilities in stratified-rotating fluids: effects of strong thermal diffusion and non-traditional f-plane*, **PARK Junho, PRAT V., MATHIS S.**
- 14:10 – 14:30 *Studying internal gravity wave turbulence by 2D stratified flow simulations with FluidSim*, **CALPE-LINARES Miguel, AUGIER P., MORDANT N.**
- 14:30 – 15:30 **Poster session**
- 20:00 – 22:00 **BBQ**

FRIDAY, JULY 12TH:

- 8:30 – 9:30 *Dynamics of gas, dust and planets in protoplanetary discs*, **BARUTEAU Clément**
- 9:30 – 10:00 **Coffee Break**
- 10:00 – 11:00 *Dynamics of gas, dust and planets in protoplanetary discs*, **BARUTEAU Clément**
- 11:00 – 12:00 *An Introduction to Dynamos*, **TOBIAS Steve**

12:00 – 13:30 **Lunch**

13:30 – 14:30 *Internal Gravity Waves in Stellar Interiors*, **ROGERS Tamara**

14:30 – 14:50 *Wall-bounded stably stratified turbulence at large Reynolds Number*,
ZONTA Francesco, SOLDATI A., HADI SICHANI P.

14:50 – 15:10 *The role of coherent structures in hydromagnetic dynamos: a wavelet-based approach*, **BUSHBY Paul, TOBIAS S.**

15:10 – 15:30 *Precessing flow in a spheroid*, **MEUNIER Patrice, NOBILI C., FAVIER B., LE BARS M.**

SATURDAY, JULY 13TH:

8:30 – 9:30 *Inertial Waves and Inertial Modes in Planets*, **Noir Jerome**

9:30 – 10:00 **Coffee Break**

10:00 – 11:00 *Internal gravity waves in the ocean and the atmosphere*, **STAQUET Chantal**

11:00 – 12:00 *Internal Gravity Waves in Stellar Interiors*, **ROGERS Tamara**

12:00 – 13:30 **Lunch**

13:30 – 15:30 *Dynamics of gas, dust and planets in protoplanetary discs*, **BARUTEAU Clément**

MONDAY, JULY 15TH:

8:30 – 9:30 *Nonlinear States in Stratified Shear Flows*, **KERSWELL Rich et al.**

9:30 – 10:00 **Coffee Break**

10:00 – 10:20 *Eye formation in large scale vortices: idealised models vs actual tropical cyclone*,
ORUBA Ludivine

10:20 – 10:40 *Impacts of inertial/symmetric instabilities on ocean front*, **GRISOUARD Nicolas**

10:40 – 11:00 *Characterization of intermittency in the upper ocean*, **ISERN-FONTANET J., Turiel A.**

11:00 – 11:20 *A singular vorticity wave packet within a rapidly rotating vortex*, **CAILLOL Philippe**

11:20 – 11:40 *Stability of nonlinear atmospheric gravity waves*, **SCHLUTOW Mark**

11:40 – 12:00 *Impact of internal gravity waves on dynamics and transport in the stratosphere*,
SACHA Petr, RIEDER Harald, PISOFT Petr, ANEL J.

12:00 – 13:30 **Lunch**

13:30 – 14:30 *Astrophysical discs: from accretion theory to high resolution observations*. **LESUR G.**

14:30 – 14:50 *Toward magnetostrophic dynamos*, **DORMY Emmanuel**

14:50 – 15:10 *Stationary Taylor state magnetic fields and Magneto-Coriolis waves*,
HARDY Colin, LIVERMORE P., NIESEN J.

15:10 – 15:30 *An analytical example of the inertial/strong-field scaling regimes for the saturation of the dynamo instability*, **SESHASAYANAN Kannabiran, Gallet B.**

TUESDAY, JULY 16TH:

8:30 – 9:30 *WKBJ Theory of Triad Interactions of Internal Gravity Waves in Varying Background Flows*, **AKYLAS Triantaphyllos et al.**

9:30 – 10:00 **Coffee Break**

10:00 – 10:20 *Morphology and transitions in rapidly rotating planetary cores*,
MCDERMOTT B. R., DAVIDSON P. A.

10:20 – 10:40 *Turbulent convective lengthscale in planetary cores*,

GUERVILLY Céline, CARDIN P., SCHAEFFER N.

10:40 – 11:00 *Saturn's magnetic field revealed by the Cassini Grand Finale*, **CAO Hao**

11:00 – 11:20 *Dynamics of a reactive spherical particle falling in a linearly stratified layer*,
HUGUET Ludovic, LE BARS M.

11:20 – 11:40 *Interactions between tidal flows and convection*, **DUGUID Craig, BARKER A., JONES C.**

11:40 – 12:00 *Nonlinear tides in radiative stellar interiors*, **VIDAL Jeremie**

12:00 – 13:30 **Lunch**

13:30 – 14:30 *Tidally-generated internal waves and mixing in the ocean*, **LEGG Sonya**

14:30 – 14:50 *Analogy between viscoelastic hydrodynamics and Magnetohydrodynamics*,
VIEU Thibault, MUTABAZI I.

14:50 – 15:10 *Vortices in self-gravitating Protoplanetary disks*, **RENDON Restrepo Steven, BARGE P**

15:10 – 15:30 *Rayleigh-Bénard convection interacting with a melting boundary*,
PURSEED Jhaswantsing, FAVIER B., DUCHEMIN L.

WEDNESDAY, JULY 17TH:

8:30 – 9:30 *Turbulence of gravitational waves in the primordial universe*, **GALTIER Sébastien**

9:30 – 10:00 **Coffee Break**

10:00 – 10:20 *Multiscale Modeling of Strongly Stratified Turbulence*, **CHINI Gregory P., MICHEL G., JULIEN K., CAULFIELD C.**

10:20 – 10:40 *Wave and vortex generation at baroclinic unstable fronts*, **FLOR Jan-Bert, JOUGLA T., THYSEN J.-H., VAN BUNDER T.**

10:40 – 11:00 *Global Climate Modeling of Saturn's stratosphere*, **BARDET Deborah, SPIGA A., GUERLET S., MILLOUR E., BOISSINOT A., DUBOS T.**

11:00 – 11:20 *WKB Theory of Triad Interactions of Internal Gravity Waves in Varying Background Flows*, **VOELKER Georg S., ACHATZ Ulrich**

11:20 – 11:40 *Nonlinear dynamics of forced baroclinic critical layers*, **WANG Chen, BALMFORTH N J.**

11:40 – 12:00 *Wave propagation and tidal dissipation in giant planets containing regions of layered semi-convection*, **PONTIN Christina, BARKER Adrian, HOLLERBACH Rainer**

12:00 – 13:30 **Lunch**

13:30 – 14:30 *Internal gravity waves in the ocean and the atmosphere*, **STAQUET Chantal**

14:30 – 14:50 *Characterizing Convection in the Solar Interior*, **BÖNING Vincent**

14:50 – 15:10 *Magneto-buoyancy in the solar tachocline*, **WOOD Toby S.**

15:10 – 15:30 *Angular momentum transport and jet formation by the GSF instability in differentially rotating stellar radiation zones*, **BARKER Adrian J., TOBIAS S. M., JONES C. A.**

20:00 – 22:00 **Banquet**

THURSDAY, JULY 18TH:

8:30 – 9:30 *Inertial Waves and Inertial Modes in Planets*, **NOIR Jerome**

9:30 – 10:00 **Coffee Break**

10:00 – 10:20 *The inertial wave activity during spin-down in a rapidly rotating penny shaped cylinder*, **SOWARD Andrew M., ORUBA L., DORMY E.**

10:20 – 10:40 *Transition from inertial wave turbulence to geostrophic turbulence in rotating fluids - an experimental study*, **LE REUN Thomas, FAVIER Benjamin, LE BARS Michael**

- 10:40 – 11:00 *Inertial waves in spherical shells*, **LIN Yufeng**
- 11:00 – 11:20 *Diffusion of inertia-gravity waves by geostrophic turbulence*, **KAFIABAD Hossein, SAVVA M., VANNESTE J.**
- 11:20 – 11:40 *Propagation of magneto-gravito-inertial waves in rapidly rotating, magnetic stars*, **PRAT Vincent, MATHIS S., AUGUSTSON K., VALADE A., LIGNIÈRES F., BALLOT J., ALVAN L., BRUN S.**
- 11:40 – 12:00 *Hypergravity wave turbulence*, **CAZAUBIEL A., FALCON E., MAWET S., DARRAS A., GROJEAN G., SORBOLO S., VAN LOON J. W. A.**
- 12:00 – 13:30 **Lunch**
- 13:30 – 13:50 *Linear and nonlinear waves and instabilities coupled to moist convection in tropics*, **ZEITLIN Vladimir**
- 13:50 – 14:10 *Collision of cloud droplets settling in turbulent atmosphere*, **PATRA Pijush, ROY A.**
- 14:10 – 14:30 *Inertia-gravity-wave scattering by quasigeostrophic Turbulence*, **SAVVA Miles, KAFIABAD H., VANNESTE J.**
- 14:30 – 14:50 *On the validity of the frozen-in approximation for acoustic wave propagation through solar granulation*, **POULIER Paul-Louis, FOURNIER D., GIZON L., DUVALL Jr T. L.**
- 14:50 – 15:10 *A Generalized Mixing Length for Eddy-Diffusivity Mass-Flux Models of Boundary Layer Turbulence and Convectio*, **LOPEZ-GOMEZ Ignacio, SCHNEIDER T.**
- 15:10 – 15:30 *Internal wave focusing by a horizontally oscillating torus: nonlinear aspects*, **SHMAKOVA Natalia D., ERMANYUK E.V., VOISIN B., FLOR J.-B.**

FRIDAY, JULY 19TH:

- 8:30 – 9:30 A united asymptotic approach to fluid dynamical problems in rapidly rotating systems, **ZHANG Keke**
- 9:30 – 10:00 **Coffee Break**
- 10:00 – 10:20 *Modeling eddy-driven jets streams on Jupiter*, **BOISSINOT Alexandre, SPIGA A., GUERLET S., CABANES S.**
- 10:20 – 10:40 *Differentially heated rotating annulus experiments to study gravity wave emission from jets and front*, **RODDA Costanza, HARLANDER U., HIEN S., ACHATZ U.**
- 10:40 – 11:00 *Comparative statistical analysis of zonal jet flows from laboratory and Global Climate Mode*, **CABANES Simon, SPIGA A., GUERLET S., MILLOUR E.**
- 11:00 – 11:20 *Experimental and numerical study of Jupiter's deep-seated zonal jets: formation, dynamics and long-term evolution*, **LEMASQUERIER Daphné, FAVIER B., LE BARS M.**
- 11:20 – 11:40 *A new laboratory set-up to emulate the high latitudes of Saturn's atmosphere*, **ESPA Stefania, CABANES S., GALPERIN B.**
- 11:40 – 12:00 *Rossby modes in stellar polytropes*, **DAMIANI Cilia**
- 12:00 – 13:30 **Lunch**
- 13:30 – 13:50 *Salt-finger turbulence in two dimensions*, **KNOBLOCH Edgar, XIE J.-H., JULIEN K.**
- 13:50 – 14:10 *The dynamical tide in density staircases*, **ANDRÉ Quentin, MATHIS S., BARKER A. J.**
- 14:10 – 14:30 *The Formation of Double-Diffusive Layers in a Weakly-Turbulent Environment*, **SHIBLEY Nicole, TIMMERMANS M.-L.**
- 14:30 – 14:50 *Radiatively driven convection*, **MIQUEL B., BOUILLAUT V., AUMAITRE S., GALLET B.**
- 14:50 – 15:10 *Variability of stochastically forced beta-plane zonal jets*, **COPE Laura, HAYNES P.**
- 15:10 – 15:30 *On the coalescence of anticyclones in stratified rotating flows*, **LE GAL Patrice, OROZCO ESTRADA A., CRUZ GOMEZ R., CROS A.**