

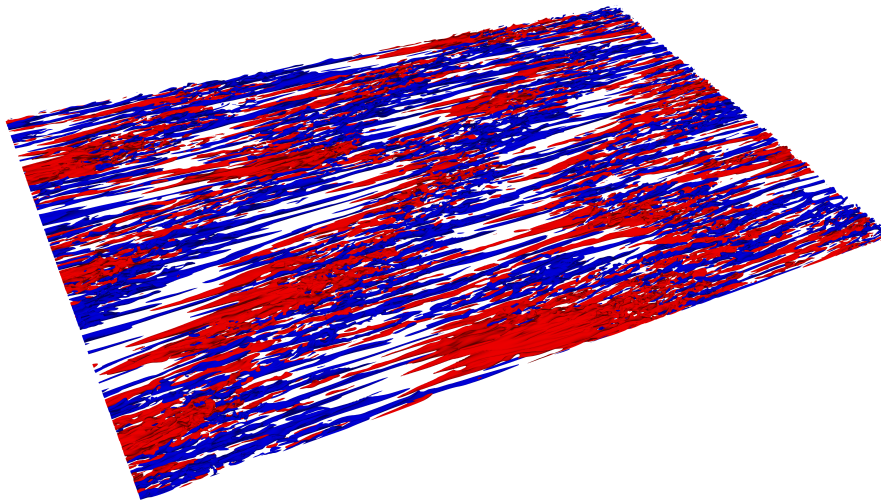


Euromech Colloquium 658

Coherent structures and instabilities in transitional and turbulent wall-bounded flows

POLITECNICO DI BARI - DIPARTIMENTO DI MECCANICA, MATEMATICA E MANAGEMENT -
SEPTEMBER 15-17, 2025

Schedule



DNS of turbulent channel flow

PhD thesis of N. Ciola

DynFluid - Arts & Métiers ParisTech / Politecnico di Bari

We gratefully acknowledge the Sponsors of the EUROMECH Colloquium 658:

- Politecnico Di Bari,
- EUROMECH (the European Mechanics Society),

Practical Information

Room location & Registration The EUROMECH-Colloquium 658 will be held at the Polytechnical University of Bari (Via Orabona 4, Bari, you'll find a map here <https://maps.app.goo.gl/fDM5NxrLuyUpSyX6>), about 20 minutes of walk from the Railway Station. The Colloquium will be held in the "Aula Magna Orabona" room. The route to the "Aula Magna Orabona" will be signaled with arrows. The registration desk will be found at the entrance of the "Aula Magna Orabona" on the first floor. Registration of the participants to the Colloquium will be active in the morning of 15th September between 08:00 and 08:45.

Social Events Lunches and coffee breaks are planned during the conference according to the time plan. Lunches will be served in the hall at the entrance of the "Aula Magna Orabona", on the first floor. Furthermore, two social events are planned:

- Monday, the 15th of September from 18:00: The Conference participants are invited to a welcoming tour cocktail in the Old Town of "Bari Vecchia". After a guided tour of the Old Town, drinks and snacks will be served.
- Tuesday, the 16th of September from 20:00: The social dinner will be held in the characteristic town of Alberobello, which has been declared World Heritage of UNESCO for the "Trulli" (fig. 2) , prehistoric drywall buildings characteristics of this region. The bus to Alberobello will move at 17:30 from the entrance of the Politecnico di Bari (Via Orabona, 4).



Figure 1: The dock in the Old Town of Bari.



Figure 2: View of Alberobello by night.

How to get to the conference?

By plane: via the Bari-Palese Airport

Be aware that there are direct flights to Bari from many European cities (from Paris Beauvais, London Stansted and so on). Don't forget to check the available flights on low-cost airlines which provide many of those direct (and very cheap) flights. From the Airport take the train to Bari Centrale Station, whose timetable and price can be found at this link:

<https://www.ferrotramviaria.it/en/from-airport>.

By train Get off at Bari Centrale Station and enjoy a 20 minutes walk towards the Politecnico of Bari or take bus 21 in Via Melo 230 (right in front of the railway station) to Caduti di via Fani, and get off at the stop Re David (PoliBa) (you'll find further information at the link: <https://www.amtab.it/en/move-with-us/routes-and-timetables>).

Wi-Fi All the campus is covered by the Wi-Fi network, where the access points are located mostly in the conference rooms and public places. The account associated to the conference will be given during the registration process. The participants can also use the Wi-Fi network Eduroam which is active in the whole Campus.

Public transport Below, a map of the metro lines covering the city and its suburbs (fig. 3) as well as a map of the city with the bus lines (fig. 4).



Figure 3: Bari subway map.

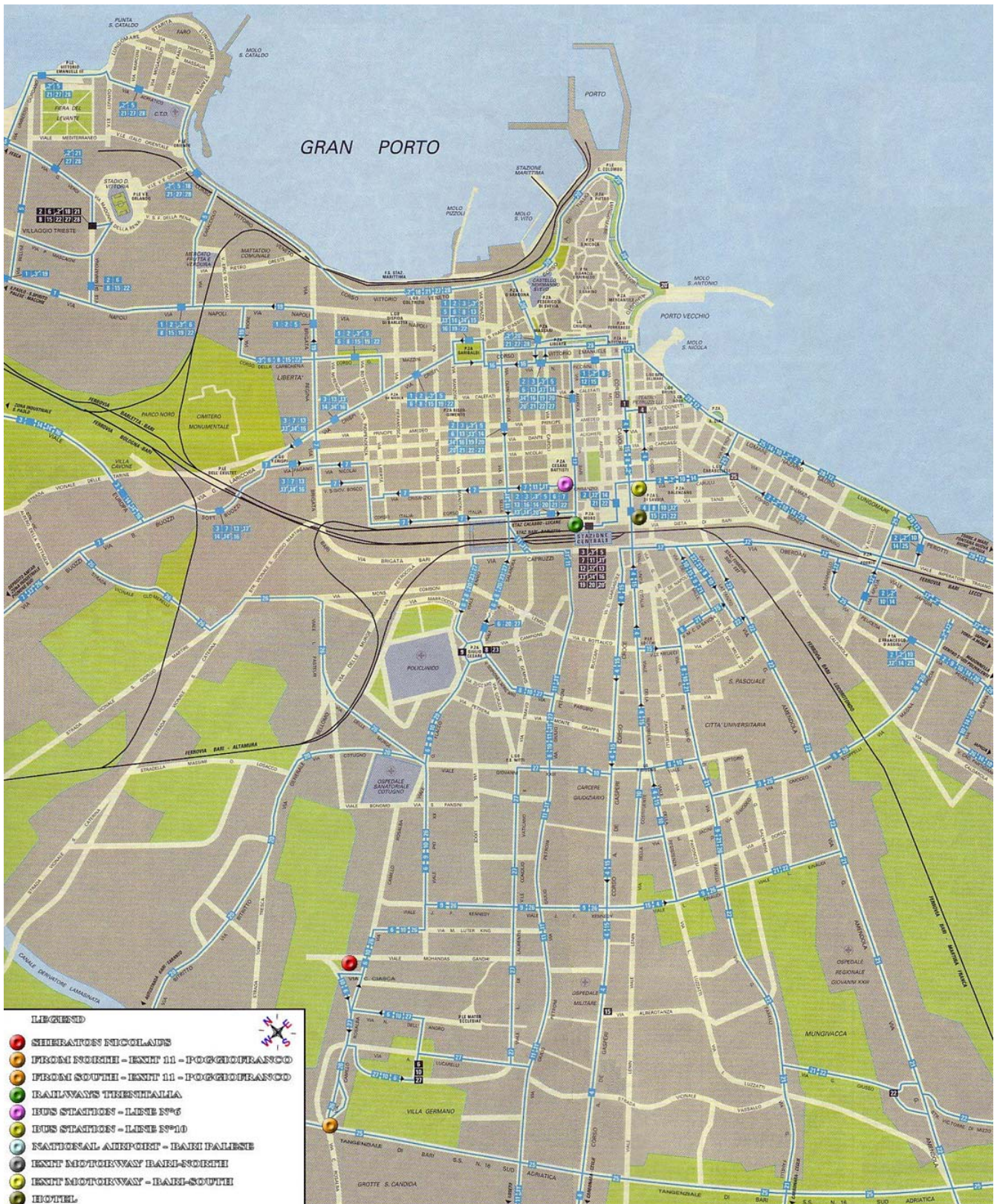


Figure 4: City map of Bari.

Schedule

September 15, 08:00 - 16:20			
08:00 - 08:45	Registration		
08:45 - 09:00	Welcome and opening remarks. S. Cherubini		
Keynote lecture - Chair: Y. Duguet			
09:00 - 09:50	E. Marensi	Transition to and from turbulence in a vertical heated pipe	Univ. of Sheffield UK
Session: Invariant coherent structures - Chair: Y. Duguet			
09:50 - 10:10	S. P. Gepner	Geometric Homotopy in Pipe Flow: Tracing Invariant Solutions from Discrete to Continuous Symmetries	Warsaw Univ. of Technology, Poland
10:10 - 10:30	O. Ashtari	Variational methods for computing unstable invariant solutions in wall-bounded fluid flows	EPFL, Switzerland
10:30 - 10:50	N. Ciola	Modelling laminar-turbulent patterns in transitional channel flow	DynFluid/ENSAM Politecnico di Bari
10:50 - 11:10	A. Kozluk	Exploring order at the edge of chaos: global streamwise-localised simple invariant solutions in square duct flow	Univ. of Osaka Japan
11:10 - 11:30: Coffee break			
Session: Periodic flows - Chair: A. Bottaro			
11:30 - 11:50	F. Alizard	Wavepacket dynamics in compliant pulsatile plane channel flows	Univ Lyon 1 / LMFA France
11:50 - 12:10	R. Bertoncello	Secondary stability of Tollmien-Schlichting waves in a Blasius boundary layer	Politenico di Milano Italy
12:10 - 12:30	J.-C. Loiseau	LightKrylov + neklab : a modern Fortran framework for bifurcation analysis of large-scale systems	DynFLuid/ENSAM France
12:30 - 12:50	S. Kern	Stability of large-amplitude pulsatile flow in a torus	DynFluid/ENSAM France
12:50 - 13:10	P;-Y. Passaggia	Instabilities of pulsating Poiseuille flows heated from above	Univ. of Orleans, PRISME, France
13:10 - 14:20: Lunch			
Session: Flow unsteadiness and low-order modeling - Chair: J. Jimenez			
14:20 - 14:40	B. Semin	Second oscillatory bifurcation past a sphere: experiments	ESPCI, PMMH France
14:40 - 15:00	C. Mimeau	Second oscillatory bifurcation past a sphere and route to chaos: numerical analysis	M2N/CNAM France
15:00 - 15:20	J. V. N. Neiva	Low order model for unsteady state of laminar separation bubble using experimental data	Pontificia Univ. Catolica do Rio de Janeiro, Bresil
15:20 - 15:40	O. Semeraro	Mean flow data assimilation using physics-constrained Graph Neural Network	LISN-CNRS France
15:40 - 16:00	K. Volokh	Transition to Turbulence via Material Instabilities	Israel Inst. of Technology Israel
16:00 - 16:20	S. Vellala	Effect of periodic velocity modulation on stability of the 1D Kuramoto-Sivashinsky system	Delft Univ. of Tech. The Netherlands
18:00 - 19:00 Old Town tour			
19:00 - 20:00: Welcoming cocktail			

September 16, 08:40 - 16:40			
Keynote lecture - Chair: J.-C. Loiseau			
08:40 - 09:30	K. Oberleithner	Too Large to See: Spectral Insights into Very Low Frequency Coherent Structures	Technische Universität Berlin Germany
Session: Transitional flows - Chair: J.-C. Loiseau			
09:30 - 09:50	A. Palumbo	Transition to turbulence in planar synthetic jets: numerical simulations and coherent structures eduction	Sapienza Univ. di Roma, Italy
09:50 - 10:10	A. Bottaro	Instability and transition of the rotating disk boundary layer over homogenized textured surfaces	Univ. of Genova Italy
10:10 - 10:30	C. Leclercq	Closed-loop control robust to finite-amplitude perturbations: application to reduced-order models of subcritical transition	ONERA DAAA France
10:30 - 10:50	H. Fasel	Investigations of the interaction of boundary-layer transition and separation for swept wings: DNS, wind- and flight experiments	Univ. of Arizona Tucson USA
10:50 - 11:10: Coffee break			
Session: Coherent structures in turbulent flows - Chair: H. Fasel			
11:10 - 11:30	J. Jimenez	Regeneration of long streaks in wall-bounded flows	Politecnica Madrid Spain
11:30 - 11:50	Z. Hao	Linearized Processes Preceding Orr Bursts in Turbulence in Minimal Channels	Politecnica Madrid Spain
11:50 - 12:10	J. Soria	Energy transfer of energy-containing motions in zero-pressure gradient turbulent boundary layer	Monash Univ. Australia
12:10 - 12:30	G. Porpora	Stability analysis of large-scale structures in highly confined turbulent wakes	Sapienza Univ. di Roma, Italy
12:30 - 12:50	U. Rist	Lagrangian Areas of Minimal Stretching in a TBL	Univ. of Stuttgart IAG, Germany
12:50 - 13:10	E. Wesfreid	Transition and self-sustained process in Couette-Poiseuille flow	ESPCI/PMMH France
13:10 - 14:20: Lunch			
Session: Resolvent and receptivity analyses - Chair: U. Rist			
14:20 - 14:40	A. Bongarzone	Mean resolvent analysis of periodic flows	ONERA/DAAA France
14:40 - 15:00	T. Burton	Variational Framework for Approximating Chaotic Statistics and Sensitivities using Resolvent Analysis	Univ. of Southampton UK
15:00 - 15:20	Y. Duguet	Linear and nonlinear receptivity of axisymmetric rotor-stator flow	LISN, CNRS France
15:20 - 15:40	P. Penet	Perturbed eddy-viscosity approach in resolvent analysis of a turbulent boundary layer	ONERA/DAAA France
15:40 - 16:00	T. Roemer	Experiments on roughness-induced laminar-turbulent transition with free-stream turbulence	Univ. of Stuttgart IAG, Germany
16:00 - 16:20	A. Ravaioli	Experimental study of receptivity and transition to turbulence in consecutive asymmetrical bifurcating ducts	Univ. di Bologna Italy
16:20 - 16:40	N. Alferez	An automatic code generation framework applied to GSA of 3D screeching jets.	DynFluid-CNAM France
17:30: Departure by bus for Alberobello			
20:00 - 24:00: Conference Dinner at Alberobello			

September 17, 08:40 - 14:45			
Keynote lecture - Chair: J.-C. Robinet			
08:40 - 09:30	F. Gallaire	Noise-induced transitions after a steady symmetry-breaking bifurcation: the case of the sudden expansion	EPFL LMFI Switzerland
Session: Compressible flows - Chair: J.-C. Robinet			
09:30 - 09:50	J. Cohen	Coherent Structures in Axisymmetric Hypersonic Cavities	Technion Israel
09:50 - 10:10	L. Larcheveque	Broadband quadratic couplings in a transitional shock wave-boundary layer interaction	IUSTI France
10:10 - 10:30	T. Bergeon	Global linear stability analyse of over-expanded nozzle	ONERA/DynFluid France
10:30 - 10:50	J. W. Nichols	Large-Scale Input/Output Analysis of High-Speed Boundary-Layer Instability and Receptivity	Univ. of Minnesota Twin Cities, USA
10:50 - 11:10	D. Variale	Resolvent analysis of overexpanded nozzle	DynFluid/ENSAM Politecnico di Bari
11:10 - 11:30: Coffee break			
Session: Coherent structures and instabilities in complex flows- Chair: S. Cherubini			
11:30 - 11:50	A. Giannotta	Thermoacoustic Instability Analysis of Hydrogen-Enriched Premixed Methane-Air Flames Using FGM	Politecnico di Bari Italy
11:50 - 12:10	J. Sablon	Novel transient growth mechanism in variable-density q-vortices	ISAE/DAEP France
12:10 - 12:30	L. Klotz	Influence of porous material on the flow behind a backward-facing step: experimental study	Warsaw Univ. of Technology Poland
12:30 - 12:50	G. Innocenti	Effect of a regularly micro-structured inner wall on the onset of the Taylor-Couette instability	Univ. of Genova Italy
12:50 - 13:10	F. Manganelli	Coherent structures in the wake of a wind-turbine with Coriolis force	Politecnico di Bari Italy
13:10 - 13:20	Closing remarks. S. Cherubini		
13:20 - 14:25: Lunch			