Javier Sierra Ausin

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https://scholar.google.com/citations?hl=en&user=aNRXvosAAAAJ

R⁶ https://www.researchgate.net/profile/Javier-Sierra-Ausin

Employment History

2019 – present	🔖	**PhD** IMFT (France) and DIIN (Italy)
		Institut de Mécanique des Fluides, IMFT, Univ. de Toulouse, CNRS - Toulouse, France
		Dep. of Industrial Eng., DIIN, Università degli Studi di Salerno - Fisciano, Italy

Education

2019 – present	🔖	**Ph.D., UPS-UNISA** Fluid Dynamics
		Thesis title: *Mode interaction in external flows.*
2018 – 2019	🔖	**Master or Research, Université Paul Sabatier (UPS)** in Applied Mathematics.
		Functional analysis, PDEs, dyn. systems, optimization, control and num. analysis.
2015 – 2017	🔖	**MsC in Aerospace Engineering, SUPAERO** in Fluid Dynamics.
		Recipient of GIFAS scholarship
2011 – 2015	🔖	**Bachelor in Aerospace Engineering, Univ. Leon**.

Research Publications

Journal Articles

1. Tirri, A., Nitti, A., **Sierra-Ausin, Javier**, Giannetti, F., & de Tullio, M. D. (2023). Linear stability analysis of fluid–structure interaction problems with an immersed boundary method. *Journal of Fluids and Structures*, 117, 103830.

2. Sáez-Mischlich, G., **Sierra-Ausin, Javier**, & Gressier, J. (2022). The spectral difference raviart–thomas method for two and three-dimensional elements and its connection with the flux reconstruction formulation. *Journal of Scientific Computing*, 93(2), 1–54.

3. Sáez-Mischlich, G., **Sierra-Ausin, Javier**, Grondin, G., & Gressier, J. (2022). On the properties of high-order least-squares finite-volume schemes. *Journal of Computational Physics*, 457, 111043.

4. **Sierra-Ausin, J**, Lorite-Diez, M., Jimenez-Gonzalez, J., Citro, V., & Fabre, D. (2022). Unveiling the competitive role of global modes in the pattern formation of rotating sphere flows. *Journal of Fluid Mechanics*, 942.

5. **Sierra-Ausin, J.**, Fabre, D., Citro, V., & Giannetti, F. (2022). Acoustic instability prediction of the flow through a circular aperture in a thick plate via an impedance criterion. *Journal of Fluid Mechanics*, 943.

6. **Sierra-Ausin, Javier**, Bonnefis, P., Tirri, A., Fabre, D., & Magnaudet, J. (2022). Dynamics of a gas bubble in a straining flow: Deformation, oscillations, self-propulsion. *Phys. Rev. Fluids*, 7, 113603.

7. **Sierra-Ausin, Javier**, Citro, V., Giannetti, F., & Fabre, D. (2022). Efficient computation of time-periodic compressible flows with spectral techniques. *Computer Methods in Applied Mechanics and Engineering*, 393, 114736.

8. **Sierra-Ausin, Javier**, Jolivet, P., Giannetti, F., & Citro, V. (2021). Adjoint-based sensitivity analysis of periodic orbits by the fourier–galerkin method. *Journal of Computational Physics*, 440, 110403.

9. Citro, V., Giannetti, F., & **Sierra-Ausin, J.** (2020). Optimal explicit runge-kutta methods for compressible navier-stokes equations. *Applied Numerical Mathematics*, 152, 511–526.

10 **Sierra-Ausin, Javier**, Fabre, D., & Citro, V. (2020). Efficient stability analysis of fluid flows using complex mapping techniques. *Computer Physics Communications, 251*, 107100.

11 **Sierra-Ausin, Javier**, Fabre, D., Citro, V., & Giannetti, F. (2020). Bifurcation scenario in the two-dimensional laminar flow past a rotating cylinder. *Journal of Fluid Mechanics, 905*.

12 Fabre, D., Citro, V., Ferreira Sabino, D., Bonnefis, P., **Sierra-Ausin, Javier**, Giannetti, F., & Pigou, M. (2018). A practical review on linear and nonlinear global approaches to flow instabilities. *Applied Mechanics Reviews, 70*(6).

Journal Articles (submitted or under review)

1 Corrochano, A., **Sierra-Ausin, J.**, Martin, J. A., Fabre, D., & Le Clainche, S. (2023). Mode selection in annular jets with resonance 1:2. *Journal of Fluid Mechanics*.

2 **Sierra-Ausin, J.**, Fabre, D., & Knobloch, E. (2023). A note on the steady-state mode and hopf mode interaction in the presence of o(2)-symmetry. *Phys. Rev. E (submitted)*.

Journal Articles (in preparation)

1 Hirschberg, L., Guzman Inigo, J. G., Aulitto, A., **Sierra-Ausin, Javier**, Fabre, D., Morgans, A., & Hirschberg, A. (n.d.). *Linear theory and experiments for laminar bias flow impedance*.

2 **Sierra-Ausin, J.**, & Giannetti, F. (2023). *On the linear and nonlinear mechanisms for the tonal and broadband noise of subsonic rounded impinging jets*.

3 **Sierra-Ausin, J.**, & Rigas, G. (2023). *Stochastic models of turbulent wakes with discrete symmetries*.

Talks in international conferences

1 **Sierra-Ausin, J.**, Fabre, D., Giannetti, F., & Luchini, P. (2022). Dynamics of impinging rounded jets. *EFMC 14th 2022*, Athens.

2 **Sierra-Ausin, J.**, Fabre, D., & Knobloch, E. (2022). Steady-hopf with o(2) symmetry. *ERCOFTAC SIG 33*, Cadiz.

3 **Sierra-Ausin, J.**, Fabre, D., Citro, V., & Giannetti, F. (2021a). Acoustic instability prediction via an impedance criterion. application to the flow through a circular aperture in a thick plate. *ICTAM 2020+1*, Milan.

4 **Sierra-Ausin, J.**, Fabre, D., Citro, V., & Giannetti, F. (2021b). Complete analysis of the two dimensional dynamics in the wake of a rotating cylinder. *ICTAM 2020+1*, Milan.

5 **Sierra-Ausin, J.**, Lorite, J. I., M. Jimenez-Gonzalez, Fabre, D., & Citro, V. (2021). Triple hopf bifurcation in the flow past a rotating sphere. pattern formation in an axisymmetric configuration. *Conference on Applications of Dynamical Systems (DS21)*, Portland.

6 **Sierra-Ausin, J.**, Jolivet, P., Citro, V., & Giannetti, F. (2020). Sensitivity analysis of limit cycles of navier–stokes equations by the harmonic–balance methods. *Freefem days 2020*, Paris.

Invited seminars

1 **Sierra-Ausin, Javier**. (2023). Mode interaction in external flows: Applications in: Acoustics, mixed convection, rotating particles, fluid-structure-interaction and bubbles. ENS-Lyon.

Conference Proceedings

1 Hirschberg, L., Guzman Inigo, J. G., Aulitto, A., **Sierra-Ausin, Javier**, Fabre, D., Morgans, A., & Hirschberg, A. (2022). Linear theory and experiments Conts for laminar bias flow impedance: Orifice shape effect. In *28th aiaa/ceas aeroacoustics 2022 conference* (p. 2887).

2   **Sierra-Ausin, Javier**, Citro, V., & Fabre, D. (2019). On boundary conditions for compressible flow simulations. In *Symposium on fluid-structure-sound interactions and control* (pp. 335–340). Springer.

Peer-reviewing activity

Journal of Fluid Mechanics (x6)

Journal of European Fluid Mechanics (x2)

Journal of Wind Engineering and Industrial Aerodynamics

Languages

Spanish	Native language
English	Fluent
French	Fluent
Italian	Professional working

Computer skills

Languages	C, C++, Python, LaTeX, Matlab, shell scripting
Miscellaneous	FreeFem++, Git, MPI
Open-source projects	*StabFem*: Linear and nonlinear stability tools with FreeFem
	https://gitlab.com/stabfem/StabFem

Teaching Experience

2019-2020	**Practical courses** *Université de Toulouse III* (18 h)
	Mécanique des fluides (M1) (6 h)
	Ondes et turbulence (L3) (12 h)
2020-2021	**Practical courses** *Université de Toulouse III* (64 h)
	Mecanique des fluides numerique (M1) (9 h)
	Mathematics for aeronautical eng. (L2) (55 h)
2021-2022	**Practical courses** *Université de Toulouse III* (64 h)
	Mathematics for aeronautical eng. (L1 and L2) (64 h)