Aris Daniilidis

Curriculum Vitæ

Institute for Statistics and Mathematical Methods in Economics
E105-04 (VADOR), TU Wien
Wiedner Hauptstraße 8, 1040 Vienna
OCRID: 0000-0003-4837-694X
📞 *+43 1 4277 10541*
✉ *aris.daniilidis@tuwien.ac.at*
🌐 *https://www.arisdaniilidis.at/*

Education

2002	**Habilitation in Applied Mathematics**, *UPPA, Academy of Bordeaux*, France
1997	**Ph.D in Mathematics**, *University of the Aegean*, Greece
1992	**Bachelor in Physics**, *University of Athens*, Greece

Employment

current	**Professor**, *TU Wien*, VADOR (E105/04), **Austria**
2017-2021	**Deputy Director**, *Centre for Mathematical Modelling (CNRS IRL 2807)*, Santiago, **Chile**
2014-2016	**Head of the Department School**, *University of Chile*, DIM, **Chile**
2013-2021	**Professor**, *University of Chile*, Department of Mathematical Engineering, **Chile**
2007-2013	**Associate Professor (tenure)**, *UAB*, Dept of Mathematics, Catalonia, **Spain**
2004-2007	**Researcher RyC (tenure track)**, *UAB, Dept of Mathematics*, Catalonia, **Spain**
2003-2004	**Post-doc**, *INRIA, Rhône-Alpes*, BIPOP (Non-regular Mechanics), Grenoble, **France**
2002-2003	**Post-doc**, *UAB*, Department of Economics (IDEA), Catalonia, **Spain**
2001-2002	**Post-doc**, *INRIA, Rhône-Alpes*, NUMOP (Numerical Optimization), Grenoble, **France**
2000-2001	**Assistant Professor (ATER)**, *Université de Pau et des Pays de l Adour*, **France**
1998-2000	**Post-doc (Marie-Curie Fellow)**, *UPPA, CNRS Talence*, **France**

Main areas of research

- Variational Analysis, Optimization.
- Convexity, nonsmooth analysis.
- Calculus of Variations and optimal control
- Metric analysis

My research initiated the use of semialgebraic techniques in Optimization and originated what is nowadays known as *Tame Optimization*. In particular, together with J. Bolte A. S. Lewis we established, in 2005, a nonsmooth version of the celebrated KŁ–inequality. This inequality has been widely used by both communities of Numerical Optimization and Machine Learning. Another leading contribution is the notion of *self-contracted curve* (introduced in 2010), capturing the essence of convexity in dynamics. This notion turned out to be the starting point for further investigations in Optimization, Geometric Measure Theory and Metric Analysis. Other fundamental contributions relate to Functional Analysis, critical point theory and Dynamical systems. My recent research endeavors to exploit the idea of asymmetry in analysis and operations research.

10 Most Important Publications

1. A convex function satisfying the Łojasiewicz inequality but failing the gradient conjecture both at zero and infinity (with O. Ley and M. Haddou), *Bull. London Math. Soc.* **54** (2022), 590–608. `http://doi.org/10.1112/blms.12586`

2. Characterization of Filippov representable maps and Clarke subdifferentials, *Math. Programming* **189** (2021), 99-115 (with M. Bivas and M. Quincampoix). `https://link.springer.com/content/pdf/10.1007/s10107-020-01540-y.pdf`

3. Explicit formulas for $\mathcal{C}^{1,1}$ Glaeser-Whitney extensions of 1–Taylor fields in Hilbert spaces, *Proc. Amer. Math. Soc.* **146** (2018), 4487–4495 (with O. Ley, M. Haddou, E. Le Gruyer) `http://dx.doi.org/10.1090/proc/14012`

4. Sweeping by a tame proces, *Ann. Inst. Fourier* **67** (2017), 2211–2223 (with D. Drusvyatskiy) `DOI: 10.5802/aif.3133`

5. Sard theorems for Lipschitz functions and applications, *Israel J. Math.* **212** (2016), 757–790 (with L. Barbet, M. Dambrine, L. Rifford), `DOI: 10.1007/s11856-016-1308-7`

6. Orthogonal Invariance and Identifiability, *SIAM J. Matrix Anal. Appl.* **35** (2014), 580–598 (with D. Drusvyatskiy, A. S. Lewis) `https://doi.org/10.1137/130916710`

7. Morse-Sard theorem for Clarke critical values, *Adv. Math.* **242** (2013), 217–227 (with L. Barbet, M. Dambrine) `https://doi.org/10.1016/j.aim.2013.03.024`

8. Characterizations of Lojasiewicz inequalities: subgradient flows, talweg, convexity, *Trans. Amer. Math. Soc.* **362** (2010), 3319–3363 (with J. Bolte, O. Ley, L. Mazet), `DOI: S 0002-9947(09)05048-X`

9. Clarke subgradients of stratifiable functions, *SIAM J. Optim.* **18** (2007), 556–572 (with J. Bolte, A. Lewis, M. Shiota), `https://doi.org/10.1137/060670080`

10. Integration of multivalued operators and cyclic submonotonicity, *Trans. Amer. Math. Soc.* **355** (2003), 177–195 (with P. Georgiev, J.-P. Penot) `DOI: S 0002-9947(02)03118-5`

10 Additional research achievements

1. International Scientific Board GDR 3273 MOA CNRS, France (2017-2020)
2. Gaspard Monge invited professor (chair, 4-months), École Polytechnique, Palaiseau, France (09-12.2018).
3. Keynote speaker, Mathematical Optimization Down-Under (MODU2016), International Conference, Melbourne, Australia (07.2016)
4. Keynote speaker, Journées du groupe MODE de la SMAI, Dijon, France (03.2012)
5. International Interdisciplinary committee member for CONICYT, Chile (Anillos program 09.2011)
6. National Selection committee ANEP, Spain (RyC and JdC programs 05.2011)
7. Chair of the organization committee, *Optimization: Theory, Algorithms and Applications in Economics* (International Conference, OPT2011, 70 participants), CRM, Barcelona (08.2011)
8. Chair of the organization committee, *Advances in Optimization and Related Topics* (International Conference, ADORT, 69 participants), CRM, Barcelona (12.2010)
9. Chair of the organization committee, Variational Analysis and Optimization: Theory and Applications (4-month research program), CRM, Barcelona (09-12.2010)
10. Editorial board (current): JMAA (since 2008), JOGO (since 2008), JOTA (since 2014); Editorial board (former): MAPR (2005-2022), MOR (2016-2023), Optimization (2013-2022).