

André Arroja Neves

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1. EDUCATION

- **Stanford University**, Stanford, USA
Ph. D. in Mathematics, 2000-2005.
Thesis advisor: Richard Schoen.
- **Instituto Superior Técnico**, Lisboa, Portugal.
Licenciatura in Mathematics, 1999.

2. APPOINTMENTS

- 2016 – Present, Professor **University of Chicago**
- Fall 2018, Member of IAS
- 2012 – 2016, Professor **Imperial College London**
- 2011 – 2012, Reader **Imperial College London**
- 2009 – 2011, Lecturer **Imperial College London**
- 2007 – 2009, Assistant Professor, **Princeton University**
- 2005 – 2007, Instructor, **Princeton University**

3. RESEARCH INTERESTS

- Differential Geometry and Analysis of PDE's.

4. AWARDS

- **Member of American Academy of Arts and Sciences**, 2020
- **Simons Investigator Award**, 2018
- **Oswald Veblen AMS Prize**, 2016
- **New Horizons in Mathematics Prize**, 2016
- **Royal Society Wolfson Merit Award**, 2015
- **LMS Whitehead Prize**, 2013
- **Philip Leverhulme Prize**, 2012
- **Excellence in teaching award**, Princeton, 2006.

5. INVITED LECTURES

- Pedro Nunes Lectures 2020 Portugal
- Current Developments in Mathematics 2019 - Harvard, Boston, USA
- Tondeur Lecture Series - Urbana-Champaign, 2019
- Distinguished Lecture - University of Wisconsin, 2018
- Joint AMS-MAA Annual Meeting Plenary Speaker, San Diego 2018
- EMS Distinguished Speaker 2018, Valladolid, Spain 2018

- Distinguished Visitor Professor - Fields Institute, Canada, Fall 2017
- Nirenberg Lectures - CRM, Canada, 2015
- ICM Invited Section Speaker, South Korea, 2014
- Rademacher Lectures - UPenn, USA, 2014
- Current Developments in Mathematics 2013 - Harvard, Boston, USA
- Barret Lectures - University of Tennessee, USA, 2013

6. GRANTS

- **NSF grant DMS 2005468** (2020-2023)
- **NSF grant DMS 1710846** (2017-2020)
- **EPSRC Programme Grant**(joint with Prof. Topping and Prof. Dafermos)(January 2013 to January 2019) 1,600,000 GBP
- **ERC Start Grant**(January 2012 to January 2017) 1,100,000 EUR
- **Marie Curie IRG** (January 2011 to January 2015)
- **NSF grant** (July 2006 to June 2009)

7. EDITORIAL BOARDS AND COMMITTEE

- Editor of Communications in Analysis and Geometry.
- Managing Editor of Calc. Var. and Partial Differential Equations.
- Editor of Annales scientifiques de l'E.N.S. 2016–2020
- Editor of Selecta Mathematica.
- Editor of GAFA.
- Editor of Journal of Functional Analysis.
- AMS-MAA Joint Lecture Committee 2020
- Member of Research Committee of London Mathematical Society 2013–2016.

8. ORGANIZED CONFERENCES

- Joint Northwester-U of Chicago Geometry meeting 2019
- Diff. Geometry Summer School at Gulbenkian, Portugal, 2018
- Geometrie Workshop, Oberwolfach, Germany 2018
- ICMS Geometric Analysis workshop, Edinburgh, 2018
- Joint Northwester-U of Chicago Geometry meeting 2018
- Scalar Curvature Workshop, Oberwolfach, Germany 2017
- Geometry - Mario Micalef's 60th birthday, Warwick, 2017
- EPSRC Symposium: Geometric PDEs, Warwick, 2016
- Geometrie Workshop, Oberwolfach, Germany 2016
- End of Year London Geometry Conference, London, UK, 2015
- Min-max Theory and Applications, Oberwolfach, Germany 2015

- International Conference in Differential Geometry (in honour of Rick Schoen's 65h birthday), Warwick, UK, 2015
- WIC Workshop in honour of Rick Schoen's 65h birthday, London, UK, 2015
- AMS-SPM-EMS Porto Meeting Geometry session, Porto, Portugal, 2015
- Progress on Scalar Curvature Conference, Oberwolfach, Germany, 2014
- Recent Developments in Geometric Analysis, Lisbon, Portugal, 2014
- WIC (Warwick-Imperial-Cambridge) Geometry day, Cambridge, UK, March 2014
- WIC (Warwick-Imperial-Cambridge) Geometry day, London, UK, May 2013
- Willmore functional workshop, Oberwolfach, Germany, July, 2013
- Geometric Analysis Conference, Granada, Spain, June 2013
- WIC (Warwick-Imperial-Cambridge) Geometry day, Warwick, UK, June 2012
- Geometric Analysis conference, ICMS, Edinburgh, June 2011
- Geometric Analysis mini-workshop, Princeton, USA, March, 2008

9. POSTDOCS AND STUDENTS

9.1. **Former Postdocs:** Reto Muller, Sérgio Almaraz, Heudson Miranda, Ezequiel Barbosa, Ben Sharp, Lu Wang, Alessandro Carlotto, Dan Ketover, Yvgeni Liokumovich, Cicero Cruz,IVALDO NUNES, Lucas Ambrósio, Rafael Montezuma, Da Rong Cheng, Marco Guaraco,

9.2. **Current Postdocs:** Ao Sun, Pedro Gaspar, Henrik Mathiessen, Daniel Stern

9.3. **Current Phd students:** Liam Mazurowski, Jingwen Chen, James Stevens, Ruoqing Jiang, Adrian Chu

9.4. **Former Phd students:** Charles Nurser, Nicolau Aiex, Celso Viana, Yuchin Sun,

10. SURVEYS

- A. Neves, Recent Progress on Singularities of Lagrangian Mean Curvature Flow. *Surveys in Geometric Analysis and Relativity*, ALM 20 (2011) 413-436
- A. Neves, New applications of Min-max Theory. *Proceedings of International Congress of Mathematics* (2014), 939-957

- F. C. Marques and A. Neves, The Willmore conjecture. *Jahresber. Dtsch. Math.-Ver.* 116 (2014), 201–222.
- F. C. Marques and A. Neves, Applications of Almgren-Pitts min-max theory. *Current developments in mathematics 2013*, 1–71, Int. Press, Somerville, MA, 2014.
- F. C. Marques and A. Neves, Min-max theory of minimal surfaces and applications. *Mathematical Congress of the Americas*, 13–25, Contemp. Math., 656, Amer. Math. Soc., Providence, RI, 2016.
- F. C. Marques and A. Neves, Applications of Min–Max Methods to Geometry, Springer LNM, volume 2263 (2020).
- F. C. Marques and A. Neves, Morse theory for the area functional, *São Paulo J. Math. Sci.* 15 (2021), 268–279.
- D. Calegari and F. C. Marques, Minimal surface entropy of negatively curved manifolds, to appear in *Perspectives in Scalar Curvature*.

11. LIST OF PUBLICATIONS

- H. Bray and A. Neves, Classification of prime 3-Manifolds with Yamabe invariant greater than $\mathbb{R}P^3$. *Ann. of Math.* 159 (2004), 407–424.
- K. Akutagawa and A. Neves, Classification of all 3-manifolds with Yamabe invariant greater than $\mathbb{R}P^3$. *J. Differential Geom.* 75 (2007), 359–386.
- A. Neves, Singularities of Lagrangian Mean Curvature Flow: Zero-Maslov class case. *Invent. Math.* 168 (2007), 449–484.
- A. Neves and G. Tian, Existence and uniqueness of constant mean curvature foliation of asymptotically hyperbolic 3-manifolds. *Geom. Funct. Anal.* 19 (2009), 910–942.
- A. Neves, Singularities of Lagrangian mean curvature flow: Monotone case. *Math. Res. Lett.* 17 (2010) 109–126.
- A. Neves, Insufficient convergence of inverse mean curvature flow on asymptotic hyperbolic manifolds. *J. Differential Geom.* 84 (2010), 191–229.
- A. Neves and G. Tian, Existence and uniqueness of constant mean curvature foliation of asymptotically hyperbolic 3-manifolds II. *J. Reine Angew. Math.* 641 (2010) 69–93.
- H. Bray, S. Brendle, M. Eichmair, and A. Neves, Area-minimizing projective planes in three-manifold. *Comm. Pure Appl. Math.* 63 (2010), 1237–1247
- H. Bray, S. Brendle, and A. Neves, A rigidity result for area-minimizing two-spheres in three-manifolds. *Comm. Anal. Geom.* 18 (2010), 821–830

- S. Brendle, F. C. Marques, and A. Neves, Deformations of the hemisphere that increase scalar curvature. *Invent. Math.* 185, (2011), 175–197
- F. C. Marques and A. Neves, Rigidity of min-max minimal spheres in three-manifolds. *Duke Math. J.* 161 (2012), 2725–2752.
- A. Neves and G. Tian, Nonexistence of almost-calibrated translating solutions to Lagrangian mean curvature flow. *Trans. Amer. Math. Soc.* 365 (2013), 5655–5680.
- A. Neves, Finite time singularities for Lagrangian mean curvature flow. *Ann. of Math.* 177 (2013), 1029–1076.
- J. Lotay and A. Neves, Uniqueness of Lagrangian self-expanders. *Geom. Topol.* 17 (2013), 2689–2729
- F. C. Marques and A. Neves, Min-Max Theory and the Willmore Conjecture. *Ann. of Math.* 179 (2014), 683–782.
- D. Lee and A. Neves, The Penrose inequality for asymptotically locally hyperbolic spaces with nonpositive mass. *Comm. Math. Phys.* 339 (2015), 327–352.
- I. Agol, F. C. Marques and A. Neves, Min-max theory and the energy of links. *J. Amer. Math. Soc.* 29 (2016), 561–578.
- F. C. Marques and A. Neves, Existence of infinitely many minimal hypersurfaces in positive Ricci curvature. *Invent. Math.* 209 (2017), 577–616.
- F. C. Marques and A. Neves, Morse index and multiplicity of min-max minimal hypersurfaces. *Camb. J. Math.* 4 (2016), 463–511.

- D. Ketover, F. C. Marques and A. Neves, The catenoid estimate and its geometric applications. *J. Differential Geom.* 115 (2020), 1–26.
- Y. Liokumovich, F. C. Marques and A. Neves, Weyl law for the Volume Spectrum. *Ann. of Math.* 187 (2018), 933–961.
- K. Irie, F. C. Marques and A. Neves, Denseness of minimal hypersurfaces for generic metrics. *Ann. of Math.* 187 (2018), 963–972..

- T. Ilmanen, A. Neves, and F. Schulze, On short time existence for the planar network flow, *J. Differential Geom.* 111 (2019), 39–89.
- F. C. Marques, A. Neves, and A. Song, Equidistribution of minimal hypersurfaces for generic metrics. *Invent. Math.* 216 (2019), 421–443..
- F. C. Marques, A. Neves, Morse index of multiplicity one min-max minimal hypersurfaces *to appear in Advances in Mathematics.*

- M. Guaraco , F. C. Marques, and A. Neves, Multiplicity one and strictly stable Allen-Cahn minimal hypersurfaces, *preprint*.
- F. C. Marques, R. Montezuma, and A. Neves, Morse inequalities for the area functional, *to appear in JDG*.
- D. Calegari, F. C. Marques, and A. Neves, Counting minimal surfaces in negatively curved 3-manifolds, *to appear in Duke*.

12. INVITED TALKS FOR THE LAST FOUR YEARS.

National Encounter of SPM, Portugal, 2021
 Colloquium, UT River Grande Valley, 2021
 Seminario Matematico e Fisico, Milano, Italy, 2021
 Jornada da Matematica, Lisbon, Portugal, 2021
 RTG seminar Karlsruhe-Heidelberg, 2021
 Colloquium at University of Toronto, March 2020
 Lectures in Summer School of Geometric Analysis, Cetraro, Italy 2019
 Plenary speaker at 12th ISAAC congress, Aveiro, Portugal, 2019
 Geometric Analysis and General Relativity, ETH, Zurich, 2019
 Colloquium at Michigan State, Lansing, USA 2019
 Colloquium at Univ. of Tennessee, Knoxville, USA 2019
 Workshop in variational methods, IAS, Princeton, USA 2018
 Colloquium at Rutgers, Newark, USA 2018
 Colloquium at UPenn, Philadelphia, USA 2018
 Brian White's birthday conference, Stanford, USA 2018
 Lectures in Summer School of Geometric Analysis, Cetraro, Italy 2018
 Geometric Analysis Workshop, UBC, Vancouver, Canada 2018
 Colloquium at Coimbra University, Portugal 2018
 Colloquium at University of Michigan, Ann Arbor, USA 2018
 Colloquium at Rice University, Houston, USA 2018
 Colloquium at University of Illinois, Chicago USA, 2018
 Riemannian Geometry Past, Present and Future: an homage to Marcel Berger, IHES, France 2017
 Geometric Analysis Conference, Rutgers, USA 2017
 Geometry of Manifolds, Simons Center, USA 2017
 ESI Conference, Vienna, Austria, 2017
 Global Portuguese Math Meeting , Lisbon, Portugal, 2017
 Geometry - Mario Micalef's 60th birthday, UK, 2017
 UConn Geometry Day, Connecticut, USA, 2017
 Colloquium, Notre Dame University, USA, 2017
 South. California Geom. Analysis Conference, San Diego, USA, 2017
 AMS National Meeting, Plenary Speaker, Canberra, Australia, 2016
 Colloquium, Northwestern, USA, 2016
 Wolfgang Meyer 80th Birthday Conference, Florence, Italy, 2016
 CMSA Geometric Analysis Seminar, Harvard University, US, 2016

Portuguese association of Mathematical Students, Lisbon, Portugal, 2016
Geometric Flows & Related Topics, Queen Mary University of London 2016.
Colloquium, UCLA, USA , 2015
Colloquium, University Leicester, UK, 2015
10th Pacific Rim Complex Geometry Conference, Tokyo, Japan, 2015
International Conference in Differential Geometry, Warwick, UK, 2015
AMS-SPM International Meeting, Plenary Speaker, Porto, Portugal, 2015
Struwe's 60th Birthday Conference, ETH Zurich , Switzerland, 2015
Colloquium, Università di Roma "Tor Vergata" , Italy, 2015
Colloquium, University of Chicago USA, 2015
Simons Colloquium, Simons Center, Stony Brook, USA 2015
Holography and Entanglement Entropy, Orlean, France, 2015
Flowers and Friends, Frankfurt, Germany, 2015
International Conference on Minimal Surfaces, IMPA, Brazil, 2015