# Daniel Castanon-Quiroz

Postdoc Fellow
Laboratoire de Mathématiques J. A. Dieudonné. Bureau 820
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## Personal Information

**Nationality:** Mexican.

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**Personal website:** `https://danielcq-math.github.io/`

## Research Interests

- Numerical analysis of PDEs, scientific computing, finite element methods, adaptive refinement.

- Maxwell and Navier-Stokes equations.

## Education

- **Texas A&M.** College Station, Texas, USA.
  *PhD in Applied Mathematics.* *Aug. 2010 - May 2016.*
    - Advisor : Jean-Luc Guermond.
    - Thesis title: *'Solving the MHD equations in the presence of non-axisymmetric conductors using the Fourier-finite element method'.*
    `https://oaktrust.library.tamu.edu/handle/1969.1/156971`

- **IPN-Mexico.** Mexico City, Mexico.
  *Bachelor in Applied Mathematics.* *Aug. 2000 - Aug. 2005.*

## Publications and Preprints

1 M. Botti, D. Castanon Quiroz, D. A. Di Pietro, and A. Harnist, **A Hybrid High-Order method for creeping flows of non-Newtonian fluids**. *Submitted.*

2 D. Castanon Quiroz and D. A. Di Pietro, **A Hybrid High-Order method for the incompressible Navier–Stokes problem robust for large irrotational body forces**. Comput. Math. Appl., 2020. In press. `https://doi.org/10.1016/j.camwa.2019.12.005`, `https://hal.archives-ouvertes.fr/hal-02151236`

3 C. Nore, D. Castanon Quiroz, L. Cappanera and J.-L. Guermond, **Numerical simulation of the Von-Kármán-Sodium experiment**. J. Fluid Mech., 854 (2018) 10 November 2018, 164–195 `https://doi.org/10.1017/jfm.2018.582`

4 C.E. Janson, A. Shiri, J. Jansson, M. Moragues, D. Castanon, L. Saavedra, C. Degirmenci and M. Leoni, **Nonlinear Computations of Heave Motions for a Generic Wave Energy Converter**. Proceedings of NAV 2018: 19th International Conference on Ship and Maritime Research, 2018, 283–290 `http://ebooks.iospress.nl/publication/49237`, `https://bird.bcamath.org/handle/20.500.11824/901`

5 C. Nore, D. Castanon Quiroz, L. Cappanera and J.-L. Guermond, **Direct numerical simulation of the axial dipolar dynamo in the Von Kármán Sodium experiment**. EPL (Europhysics Letters), Volume 114, Number 6, July 2016. `https://doi.org/10.1209/0295-5075/114/65002`

6 C. Nore, D. Castanon Quiroz, J.-L. Guermond, J. Léorat and F. Luddens, **Numerical Dynamo Action in Cylindrical Containers**, The European Physical Journal Applied Physics (2015) 70:31101 `http://dx.doi.org/10.1051/epjap/2015150049`

## Professional Experience

- **Postdoc-Fellow.**                                                          Nice, France.
  *Nov. 2019 -*

    - Laboratoire de Mathématiques J. A. Dieudonné. Université Côte d'Azur.
    - Supervisor: Roland Masson.
    - Advanced thermal well modelling for the high performance
      simulation of geothermal systems.

- **Postdoc-Fellow.**                                                          Montpellier, France.
  *Nov. 2017 - Oct. 2019*

    - Institut Montpellirain Alexander Grothendieck (IMAG),
      Université de Montpellier.
    - Supervisor: Daniele A. Di Pietro.
    - In collaboration with EDF-Paris.
    - Research on Hybrid-High Order methods (HHO) for Navier-Stokes Eqs.

- **Postdoc-Fellow.**                                                          Bilbao, Sping.
  *Aug. 2016 - Aug. 2017*

    - Basque Center for Applied Mathematics (BCAM).
    - Supervisor: Johan Jansson.
    - Research on multiphase flow and finite element adaptivity.

- **Software Developer.**                                                      Mexico City, Mexico.
  *Aug. 2007 - Aug. 2010*

    - Insys IT, Incorporated.
    - Developed software tools for computer security such as TCP/IP servers,
      and clients using C++ and Java.

- **Engineer and Research Assistant.**                                         Mexico City, Mexico.
  *Aug. 2005 - Aug. 2007*

    - ICAT–UNAM.
    - Developed tool for the simulation of chemical systems using finite elements.

## Referee for Journals

- IMA Journal of Numerical Analysis

## Synergistic Activities

- Co-mentoring the student Hind Bouyri in her master thesis at IMAG (University of Montpellier) titled: *Implementation of Hybrid High-Order methods for convective terms in Code-Saturne.* Thesis supervisor: Daniele Di Pietro.

## Participation in Conferences and Invited Seminars

- MAFELAP 2019, mini-symposium "Theoretical and computational advances in polygonal and polyhedral methods", 18th–21st June 2019, London, England.

- POEMs 2019, session d'affichage, 29th April–3rd May 2019, Marseille, France.

- Colloquium, CIMAT, 13th December 2019, Guanajuato, Mexico.

- Colloquium, Instituto de Matemáticas, 11th December 2019, Querétaro, Mexico.

- CEDYA 2017, mini-symposium "Tecnología matemática como herramienta clave para la Industria 4.0: algunos casos de éxito", 26th–30th June 2017, Cartagena, Spain.

- COUPLED PROBLEMS 2017, 12th–14th June, 2017, Rhodes, Greece.

- 5to Congreso Metropolitano de Modelado y Simulación Numérica 2017, Mexico City, Mexico.

- Colloquium, Instituto de Matemáticas, 13th May 2019, Querétaro, Mexico.

- Colloquium, CIMAT, 12th May 2017, Guanajuato, Mexico.

- Finite Element Rodeo 2016, 4th–5th May 2016, Texas A&M, Texas, USA.

- Finite Element Rodeo 2015, 27th–28th February 2015, Southern Methodist University, Texas, USA.

- Finite Element Rodeo 2014, 28th February–1st March 2014, UT Austin, Texas, USA.

## Research Visits

- Visit to LIMSI, Orsay-Paris, France. Under grant NSF-500401-00001. Summer 2012.

## Teaching Experience

- Math 610: (Graduate class) Numerical Methods for PDEs. Recitation and Labs (Matlab). Fall 2013. Texas A&M, USA.

- Math 151: Engineering Mathematics I. Recitation and Labs (Matlab). Fall 2011. Texas A&M, USA.

- Math 141/142: Business Mathematics I & II. Help Sessions. Summer 2011. Texas A&M, USA.

- Math 442: Mathematical Modeling. Grader. Spring 2011. Texas A&M, USA.

- Math 411: Mathematical Probability. Grader. Fall 2010. Texas A&M, USA.

## Skills

**Languages :**   Spanish (native), English (fluent), French (level B2).

**Programming Languages:**   C/C++, Fortran90, Java, Python, MPI, Unix-Bash.