Josephin Giacomini

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POSITION

Postdoctoral position   since September 2017

EDUCATION

Ph.D. in Applied Mathematics	University of Camerino	2013 - 2016
M.Sc. in Mathematics and Applications, *cum laude*	University of Camerino	October 2012
B.Sc. in Mathematics and Applications, *cum laude*	University of Camerino	October 2010

RESEARCH EXPERIENCES

Post-Doctorate Project   University of Camerino   2017 - now

- Fluid Dynamics and Computational Fluid Dynamics applied to percolation processes in porous media, turbulent or laminar pipe flows, heat transfer.

FAR Project MATREND   University of Camerino   2015 - 2018

- Arranged the task about the developing of a numerical model for heat exchange in geothermal probes

Doctorate Project   University of Camerino   2013 - 2016

- Conducted detailed studies on *analytical and numerical modelling* of the flow problem and the heat transfer problem in turbulent state, applied to geothermal heat exchangers
- Developed *ad-hoc numerical simulation* tools

Master's Degree Thesis   University of Camerino   2012

- Conducted an opening research about the *existence of singularities* in a spherically symmetric *spacetime*
- Proposed an *analytical method* to search for naked singularities
- Created a starting point to confirm or deny the *Penrose hypothesis*

PUBLICATIONS

1. P. Antonini, N. Egidi, J. Giacomini, P. Maponi, "Mathematical Models for Geothermal Heat Exchangers", *MASCOT13 Proceedings, IMACS Series in Computational and Applied Mathematics* 19 (2016), pp. 11-20*.*

2. N. Egidi, J. Giacomini, P. Maponi, "Solution Strategies for Finite Elements and Finite Volumes Methods applied to Flow and Heat Transfer Problem in U-shaped Geothermal Exchangers", *AIP Conf. Proc. 1738, 480045* (2016); doi: 10.1063/1.4952281.

3. N. Egidi, J. Giacomini, P. Maponi, "Mathematical model to analyze the flow and heat transfer problem in U-shaped geothermal exchangers". *Applied Mathematical Modelling* 61 (2018), pp. 83-106, https://doi.org/10.1016/j.apm.2018.03.024.

4. J. Giacomini, M.C. Invernizzi, P. Maponi, M. Verdoya, "Testing a model of flow and heat transfer for u-shaped geothermal exchangers", *Advances in Modelling and Analysis A* 55 (3), (2018), pp. 151-157, https://doi.org/10.18280/ama_a.550308.

5. N. Egidi, J. Giacomini, M.C. Invernizzi, P. Maponi, M. Verdoya, "A mathematical model to infer underground thermal characteristics for the design of borehole heat exchangers", *MASCOT2018 Proceedings, MASCOT2018-IMACS Workshop*. To be published.

6. Massimo Verdoya, Josephin Giacomini, Maria Chiara Invernizzi, Pierluigi Maponi and Paolo Chiozzi, "Estimating thermophysical parameters from in-situ tests in borehole heat exchangers". Submitted to *Proceedings World Geothermal Congress 2020*.

7. J. Giacomini, P. Maponi, "Inverse heat conduction to model and optimise a geothermal field". To be submitted to *Inverse Problems in Science and Engineering*.

CONFERENCE PRESENTATIONS

a. **MASCOT2018** - 15th Meeting on Applied Scientific Computing and Tools, University of Rome La Sapienza, Civil and Industrial Engineering Faculty, October 2-5, 2018. *Speaker* in General Session.

b. 3rd **AIGE/IIETA** International Conference and 12th AIGE 2018 Conference, Reggio Calabria-Messina, June 14-16, 2018. *Speaker*.

c. **ICNAAM15** International Conference. Rodos Palace Hotel, Rhodes Island, Greece. September 23-29, 2015. *Speaker* and *chair* in General Session.

d. 19th **IMACS** Word Congress. Real Centro Universitario El Escorial Maria Cristina, El Escorial, Spain. August 26-30, 2013. *Speaker* in the MASCOT13 Section.

TEACHING ACTIVITY

- Exercises of **Geometry II**   (Mathematics, 2018 – 2019)
- **Computational Fluid Dynamics**   (Mathematics, 2014 – 2015)

- **Mathematics** (Pharmaceutical Chemistry and Technology, 2013 – 2014)
- **Co-advisor** of a B.Sc. thesis (2017-2018)

HONOURS AND AWARDS

▪ Fellowship	University of Camerino	August - October 2016
▪ Doctoral Fellowship	University of Camerino	2013 - 2016
▪ Accepted the Class C Project IsC23 (PEGHE)	Super Computing department of CINECA	September 2014 - June 2015
▪ Academic Scholarship	University of Camerino	2007 - 2012

EDUCATIONAL TRAVELS

University of Zagreb
Faculty of Mechanical Engineering and Naval Architecture   April - July 2015
CFD team of Prof. Hrvoje Jasak

- **OpenFOAM** software: from a beginning user to an expert user and a developer of a part of C++ code about matrix handling.

University of Genova
DICCA   July 8-12, 2013

- Introductory OpenFOAM course

ADDITIONAL INFORMATION

Languages   Italian (mother tongue)
          English (B2 – FCE certification)