

## **Sami Barmada Curriculum Vitae (updated September 2024)**

### **Bio**

Sami Barmada was born in Livorno, Italy, on the 18th November 1970.

In 1989 he joined the Electrical Engineering program at the University of Pisa where he graduated in June 1995.

In November 1995 he joined ABB Teknolog AS in Billingstادت, Norway, where he worked in the Power Systems and Components Department until June 1997.

In 1997 he joined the Ph.D. course in Applied Electromagnetics at the University of Pisa, and in year 2000 he discussed the thesis entitled "Wavelet Expansion Methods for the Numerical Analysis of Multiconductor Transmission Lines".

During the Ph.D. he was a visiting student at the University of Akron, OH, USA, under the supervision of Professor Nathan Ida, at the Electrical and Computer Engineering Department.

He was Assistant Professor and Associate Professor from 2004 to 2016 at the University of Pisa (DESTEC department), where he is now Full Professor since year 2016.

### **Teaching activity**

*Elettrotecnica (6 credits, to the students of Chemical Engineering, University of Pisa, since Academic Year 2003/2004)*

*Elettromagnetismo nel continuo (6 credits, to the students of Electrical Engineering, University of Pisa, from Academic Year 2007/2008 to 2009/2010)*

*Elettrotecnica II (9 credits, to the students of Electrical Engineering, University of Pisa, from Academic Year 2010/2011 to 2012/2013)*

*Principi di Ingegneria Elettrica (6 credits, to the students of Energy Engineering, University of Pisa, from Academic Year 2012/2013 to 2019/2020)*

*Elettrotecnica (6/9 credits, to the students of Electronics Engineering and Telecommunications Engineering, University of Pisa, from Academic Year 2017/2018 to 2019/2020)*

*Elettrotecnica (3/9 credits, to the students of Electronics Engineering, University of Pisa, from Academic Year 2020/2021)*

*Elettromagnetismo Applicato e Metodi di Ottimizzazione (6 credits, to the students of Electrical Engineering, University of Pisa, from Academic Year 2020/2021)*

*Elettrotecnica (6 credits to the students of Naval Engineering, Accademia Navale di Livorno, from Academic Year 2022/2023)*

### **Project coordination**

PRIN 2004: EMC and Signal Integrity Issues Analysis in the Design of High Performance Interconnects (coordination for UniPi)

PRIN 2006: Design of Test Procedures and Guidelines for EMC Oriented Design in Interoperable Railway Systems (coordination for UniPi)

PRIN 2008: High Speed Railway Systems Monitoring for Security and System Integrity (coordination for UniPi)

PRIN 2022: Forecast of the Effects of Lightning IN Electrical Systems (coordination for UniPi)

## **International coordination activities**

President, Applied Computational Electromagnetic Society (ACES), 2015 – 2017.

Vice President, ACES Society, 2013 – 2015

ACES Officer, 2007 – present

International Steering Committee Member CEFC (Conference on Electromagnetic Field Computation), 2016 – present

Co-Editor in chief of the ACES Journal, 2018 – present

Associate Editor of the ACES Journal, 2008 – 2017

## **Awards**

ACES Fellow (2014)

IEEE Senior Member (2010)

The John F Alcock Memorial Prize: (2004): awarded annually to a paper published by the Institution of Mechanical Engineers which concentrates on technical innovation in the railway traction field (S. Barmada, A. Landi, M. Papi, L. Sani, “Wavelet Multiresolution Analysis for Monitoring the Occurrence of Arcing on Overhead Electrified Railways”).

The Exemplary Service Award: ACES Society (2008) for “Outstanding Service as 2007 ACES Symposium Chair”.

The ACES Meritorious Service Award: ACES Society (2015) “For exemplary and dedicated service to the society including the annual conference and the ACES Journal”.

## **International Conferences (General Chairman):**

ACES 2007 (Verona, Italy)

ACES 2017 (Firenze, Italy)

IEEE CEFC 2020 (Pisa, Italy, turned into virtual)

## **International Conferences (Technical Program Chairman)**

PIERS 2004 (Pisa, Italy)

ACES 2013 (Monterey, USA)

ACES 2014 (Jacksonville, USA)

IEEE ICWITS – ACES 2016 (Honolulu, USA)

ACES 2020 (Monterey, USA, turned into virtual)

ACES 2021 (Virtual)

IEEE CEFC 2022 (Denver, Colorado, USA)

## **International Conferences (Editorial Board member)**

RAILWAYS 2014 (Ajaccio, France)

RAILWAYS 2016 (Cagliari, Italy)

IEEE CEFC 2016 (Miami, USA)

RAILWAYS 2018 (Barcelona, Spain)

## Publications on International Journals for years 2024 and 2024

- S. Barmada, S. Dodge, M. Tucci, A. Formisano, P. Di Barba, M. E. Mognaschi, "**A Novel Hybrid Boundary Element - Physics Informed Neural Network Method for Numerical Solutions in Electromagnetics**" in *IEEE Access* (doi: 10.1109/ACCESS.2024.3500039), 2024
- E. A. Sekehravani, S. Barmada and A. Formisano, "**Modal Analysis for Induced Currents in Metallic Plates**," in *IEEE Transactions on Magnetics*, doi: 10.1109/TMAG.2024.3457151, 2024
- J. Zhu, S. Barmada, A. Musolino, L. Sani, "**Maintain Power Transmission and Efficiency Tracking Using Variable Capacitors for Dynamic WPT Systems**". *Electronics* **2024**, 13,2853. <https://doi.org/10.3390/electronics13142853>
- S. Rao, S. Yang, M. Tucci, M. Marracci, S. Barmada, "**Enhanced prediction of transformers vibrations under complex operating conditions**", *Measurement*, Volume 238, 2024,
- S. Barmada, N. Fontana, L. Sandrolini, and M. Simonazzi, "**Analysis of current distribution and termination conditions in 2D metasurfaces**", *COMPEL - The international journal for computation and mathematics in electrical and electronic engineering*, Vol. 43, no. 3, pp. 427 – 443 <https://doi.org/10.1108/COMPEL-10-2023-0548>
- M. Nicora, M. Tucci, S. Barmada, M. Brignone and R. Procopio, "**Lightning Location and Peak Current Estimation From Lightning-Induced Voltages on Transmission Lines With a Machine Learning Approach**," in *IEEE Transactions on Electromagnetic Compatibility*, vol. 66, no. 3, pp. 890-899, June 2024,
- E. Canicattì, N. Fontana, S. Barmada, A. Monorchio, "**Open-Ended Coaxial Probe for Effective Reconstruction of Biopsy-Excised Tissues Dielectric Properties**". *Sensors* 2024, 24, 2160.
- G. Giovannetti, N. Fontana, A. Flori, M.F. Santarelli, M. Tucci, V, S. Barmada, F. Frijia. "**Machine Learning for the Design and the Simulation of Radiofrequency Magnetic Resonance Coils: Literature Review, Challenges, and Perspectives**" *Sensors*. 2024; 24(6):1954. <https://doi.org/10.3390/s24061954>
- S. Barmada, P. Di Barba, N. Fontana, M.E. Mognaschi, M. Tucci, "**A Source Identification Problem in Magnetics Solved by Means of Deep Learning Methods**". *Mathematics* 2024, 12, 859. <https://doi.org/10.3390/math12060859>
- J. Zhu, S. Barmada, M. Ceraolo, N. Fontana, A. Musolino, "**Resonant coil matrix shielding for dynamic WPT systems**" *International Journal of Applied Electromagnetics and Mechanics*, 1-16, 2024.
- S. Rao, G. Zou, S. Yang, S. Barmada, "**A feature selection and ensemble learning based methodology for transformer fault diagnosis**", *Applied Soft Computing*, Volume 150, 2024, 111072, ISSN 1568-4946, <https://doi.org/10.1016/j.asoc.2023.111072>.

- S. Barmada, P. D. Barba, A. Formisano, M. E. Mognaschi, and M. Tucci, “**Physics-informed Neural Networks for the Resolution of Analysis Problems in Electromagnetics**”, *ACES Journal*, vol. 38, no. 11, pp. 841–848, Nov. 2023.
- S. Rao, S. Yang, M. Tucci, S. & Barmada, “**Convolutional neural networks applied to dissolved gas analysis for power transformers condition monitoring**”. *International Journal of Applied Electromagnetics and Mechanics*, 73 (2023) 265–281 DOI 10.3233/JAE-230011.
- S. Barmada, P. D. Barba, N. Fontana, M. E. Mognaschi and M. Tucci, “**Electromagnetic Field Reconstruction and Source Identification Using Conditional Variational Autoencoder and CNN**,” in *IEEE Journal on Multiscale and Multiphysics Computational Techniques*, vol. 8, pp. 322-331, 2023, doi: 10.1109/JMMCT.2023.3304709.
- M. Oliva, L. De Marchi, A. Cuccaro, G. Fumagalli, R. Freitas, N. Fontana, M. Raugi, S. Barmada, C. Pretti, “**Introducing energy into marine environments: A lab-scale static magnetic field submarine cable simulation and its effects on sperm and larval development on a reef forming serpulid**”, Volume 328, pp. 1 -8, 2023, 121625, ISSN 0269-7491
- S. Barmada, P. Di Barba, A. Formisano, M. E. Mognaschi, and M. Tucci, “**Learning-Based Approaches to Current Identification from Magnetic Sensors**,” *Sensors*, vol. 23, no. 8, p. 3832, Apr. 2023, doi: 10.3390/s23083832.
- S. Barmada, A. Musolino, J. Zhu and S. Yang, “**A Novel Coil Architecture for Interoperability and Tolerance to Misalignment in Electric Vehicle WPT**,” in *IEEE Transactions on Magnetics*, vol. 59, no. 5, pp. 1-5, May 2023, Art no. 8600205, doi: 10.1109/TMAG.2023.3235713.
- Formisano, S. Barmada and M. Raugi, “**Impact of Nearby Lightning Strikes on Wireless Power Transfer Ground Assembly**,” in *IEEE Transactions on Magnetics*, vol. 59, no. 5, pp. 1-4, May 2023, Art no. 8600104, doi: 10.1109/TMAG.2022.3233470.
- T. Liang, S. Barmada, N. Fontana, Y. Xie, D. Brizi, A. Monorchio, “**Electromagnetic interferences susceptibility analysis for a metasurface-modified wireless power transfer system**” *Int J Numer Model*, pp. 1 – 12, 2023;36(4):e3084. doi:10.1002/jnm.3084
- S. Barmada, N. Fontana, L. Sandrolini and M. Simonazzi, “**Optimal Terminations of 2-D Meta-Surfaces for Uniform Magnetic Field Applications**,” in *IEEE Transactions on Magnetics*, vol. 59, no. 5, pp. 1-4, May 2023, Art no. 9200504, doi: 10.1109/TMAG.2022.3231354.
- S. Barmada, M. Tucci, L. Sani and C. Tozzo, “**Deep Neural Network-Based Electro-Mechanical Optimization of Electric Motors**,” in *IEEE Transactions on Magnetics*, vol. 59, no. 5, pp. 1-4, May 2023, Art no. 8201204, doi: 10.1109/TMAG.2022.3230970.

Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003 e dell’art. 13 GDPR”

