

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
**DOTTORATO DI RICERCA / PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

Seminar announcement

Friday 15 September 2023, Time: 11:30 - 13:30

Room “Laboratorio Sala Macchine”, Floor 0, Building 3, DIETI - Via Claudio, 21 - NAPOLI



Dr. Matilde D'Arpino

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Research in Energy Storage Systems for Automotive, Aerospace and Grid-connected Systems at The Ohio State University Center for Automotive Research

Abstract: The Ohio State University is a public land-grant research university in Columbus, Ohio, and one of the largest academic institutions in the US with more than 60,000 students. The Center for Automotive Research (CAR) is the pre-eminent research center in sustainable and safe mobility in the United States and an interdisciplinary research center in The Ohio State University's College of Engineering established in 1991. CAR research focuses on: develop efficient vehicle propulsion and energy storage systems; develop new sustainable mobility concepts; reduce the impact of vehicles on the environment and grid; improve vehicle safety; increase vehicle autonomy and intelligence; and create quieter and more comfortable automobiles. CAR maintains and makes use of advanced experimental facilities including four engine test cells, a light-duty chassis dynamometer, a heavy duty chassis dynamometer, and supporting facilities. The experimental facilities at CAR support research and development activities by providing testing capabilities for electrical, electronics, electromechanical and electrochemical components and systems, and include: i) battery cell/module/pack cyclers up to 250kW 900V and EIS; ii) thermal conditioning and

thermal management prototyping; iii) SIL/HIL laboratory for prototyping and testing; iv) 750kW dynamometer for electric machine testing; v) full vehicle chassis dynos; vi) microgrid system including batteries, EV charging, PV emulators and other loads. In these areas, OSU CAR lead or collaborate on a number of projects funded by, among others, Ford Motor Company, Stellantis, Honda, Cummins, LG Chem International, the National Science Foundation, ARPA-E, the US Department of Energy, NASA, Air Force, and several National Laboratories. This seminar will provide a high-level description of the American academic word and an introduction of the recent research projects in the field of energy storage at OSU CAR. Then, we will focus on some methods and theory for diagnostics in electric drives for transportation. Diagnostic is the field of study that deals with the detection and isolation of faults in a system. The capability of identify the presence, the location and the type of fault is a fundamental step for enabling continuity of operation and/or fast maintenance. As electric systems become more complex, diagnostic techniques need to keep up with the new challenges and evolve to ensure safe and secure operation in a vehicle environment.

Lecturer short bio: *Matilde D'Arpino received the BS, MS and PhD degrees in electrical engineering with specialization in transportation from the University of Cassino (IT). During 2014–2015, she was a Research Fellow with the Laboratory of Automation, University of Cassino, working on power electronics and control for multi-source grid-connected power systems. Since 2016-2022, she has been a Research Associate, Senior Research Associate, and Research Scientist at The Ohio State University (OSU) Center for Automotive Research (CAR), Columbus, OH, USA. Currently, she is a Research Assistant Professor with the departments of Mechanical and Aerospace Engineering and Electrical and Computer Engineering at OSU. Her research interests include design of power converters and energy management for multi-source power systems (e.g. microgrids, hybrid vehicles, hybrid aircrafts), testing, modeling, design, and control of energy storage for automotive, aerospace and grid-connected systems. She is leading and co-leading research projects funded by US DOE, NASA, AFRL, and major US automotive companies. She is author or co-author of more than 50 papers published in international journals and conferences.*

For information: Prof. [Ciro Attaianese](mailto:ciro.attaianese@unina.it) (DIETI, UniNA) – ciro.attaianese@unina.it
Dr. [Luigi Pio Di Noia](mailto:luigipio.dinoia@unina.it) (DIETI, UniNA) – luigipio.dinoia@unina.it (organizers)

Attendance at the seminar is in-person. **Participants** are requested to **send an e-mail to Dr. Luigi Pio Di Noia by 12 September 2023**, with the following information: Student name and surname, name of the PhD course, PhD cycle. In the email, students abroad need to motivate the request for remote attendance, indicating the place and period they are spending in a foreign institution. Once authorized, they must keep the camera on for the entire duration of the seminar (CODE MS TEAMS: 5e40f9x)