



UNIVERSITÀ
DI PAVIA

Ph.D. Program in Electronics, Computer Science and Electrical Engineering

SEMINAR

Signal processing and condition monitoring of electrical machines

Prof. Daniel Morinigo-Sotelo and Dr. Vanesa Fernandez-Cavero
University of Valladolid (Spain)

Monday 5th June 2023: 11:00-13:00 – Tuesday 6th June 2023: 11:00-13:00
Aula Magenta, Faculty of Engineering, University of Pavia
<https://us02web.zoom.us/j/81334675356?pwd=UkxNZHFMSkNJcm1rdkU0cnhrOTBZZz09>

Abstract: Condition monitoring of electrical machines is becoming increasingly important to avoid unexpected shutdowns of industrial plants, but also to reduce energy losses and economic costs of repairing any faults. For this purpose, new and efficient signal processing techniques have been proposed in recent years. Based on these considerations, the two seminars will develop according to the following program:

1. Electrical machines: components and their failure modes; fault detection techniques; fault diagnosis.
2. Signal acquisition systems.
3. Spectral analysis of stationary signals: fundamentals (sampling theorem, Fourier Transform); filtering and resampling.
4. Spectral analysis of non-stationary signals: Heisenberg uncertainty principle; Short-Time Fourier Transform; non-parametric techniques (MUSIC); time-frequency atoms.
5. Analysis of real and synthetic signals: how to produce synthetic signals for testing; analysis of examples with synthetic and real signals.

Bio: **Daniel Morinigo-Sotelo** (M'04) received the B.S. and Ph.D. degrees in Electrical Engineering from the University of Valladolid (UVa), Spain, in 1999 and 2006, respectively. He was a research collaborator on Electromagnetic Processing of Materials with the Light Alloys Division of CIDAUT Foundation since 2000 until 2015. He is currently with the research group on Analysis and Diagnostics of Electrical Grids and Installations (ADIRE), that belongs to the ITAP Institute (UVa), and with the HSP digital Research Group, Mexico. His current research interests include fault detection and diagnostics of induction machines (IM), power quality, and smart grids. **Vanesa Fernandez-Cavero** received the B.S. degree in Industrial Organization Engineering and Electrical Engineering from the ICAI, Comillas Pontifical University (UPCO), Madrid, Spain, in 2005, and the Ph.D. degree in Electrical Engineering from the University of Valladolid (UVa), Spain, in 2018. She is currently a Researcher with the UVa. Her current research interests are monitoring of IM, detection and diagnosis of faults in inverter-fed IM in transient regimes.

Organizer

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Seminar in English

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