

# Smart materials and innovative electromagnetic devices for industrial applications

held by

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Dates:

- Friday, 10<sup>th</sup> May 2024, 3 p.m. – 5 p.m.
- Friday, 17<sup>th</sup> May 2024, 3 p.m. – 5 p.m.

## Abstract

Nowadays, sustainability issues involving economic, environmental and social dimensions are a major concern. A small contribution in this direction could be given by the application of multi-DoF electromagnetic and smart-materials-based devices. The use of such materials could enable new possibilities because of their ability to significantly change one or more of their properties when excited by an external stimulus. They are nowadays the basis of many applications, including sensors and actuators.

This course aims to illustrate some examples of new electromagnetic and smart-materials-based devices/systems. In particular, we will focus on two main phases: the first one is related to electromagnetic modelling, using analytical models (where available) and commercial codes typically based on Finite Element Method (FEM). The electromagnetic analysis will be used to investigate the performance of the devices as a function of the main geometric and physical quantities. Then, since smart devices are innovative, experimental results will be used to validate the models and to measure the actual performance on prototypes.