Eugenia Torello

Staff

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Education and training

2001
Ph.D. in Electrical Engineering
Diagnosis of electrical insulation by means of charge decay measurements
University of Genoa - Genoa - IT

1995
MSc. degree in Physics
Spin polarization of a metastable helium beam - 104/110
University of Genoa - Genoa - IT

Academic experience

2014 - ONGOING
Teacher of the Electrical Engineering Laboratory course belonging to the Electrical Engineering Degree Course
University of Genoa - Genoa - IT
Lectures and exercises in the Laboratory

2001 - 2006
Post-doctoral fellow
University of Genoa - Genoa - IT
Study of the behavior of polymer films aged by surface partial discharges

Language skills

French
Independent

English
Independent

Teaching activity

The Electrical Engineering Laboratory teaching is divided into lectures and lab exercises.
1) Summary of the topics covered in the theoretical part:
The teacher presents the fundamental properties of materials with particular regard to electrical properties. The conducting, insulating and semiconductor materials used in the construction of electrical machines and equipment are considered: the main parameters that characterize them and the main laboratory techniques used to determine them are defined.

In particular, the first and second law of Ohm are introduced, the dependence of the electrical resistivity by temperature is defined in the case of metallic conductors. The linear and non-linear voltage-current curve is considered. Joule's Law is presented in integral and local form.
As regards the Dielectric materials, homogeneous materials and composite materials are considered: recalls of the expression of the electric field are made with simple electrode geometries. The fundamental parameters of a capacitor are introduced and the RC circuit in direct current is analyzed from the theoretical point of view. From the continuous regimen, the sinusoidal regime is passed: the concept of phasor is introduced, in order to define impedances and reactances of condenser and inductor, and the concept of skin effect.
2) Laboratory exercises:
The students, divided into groups and supervised by the teacher, carry out the following practical exercises: Series and parallel resistors, Ohm's first law, Voltage-current curve of a low-voltage incandescent bulb and a diode, RC circuits in direct current, passive RC filters in sinusoidal regime at different frequencies.
The aim of the exercises is to learn how to make simple circuits on breadboards, to correctly connect instruments such as voltmeter, ammeter, DC voltage generator, arbitrary function generator and digital oscilloscope.

Research interests

I work in the CMTEST Laboratory (Components, Materials, Electrical Technologies and Electrostatics) of the DITEN Department and I deal with the planning and carrying out of test campaigns on electrical materials and components: I therefore deal with customers and suppliers. The main equipment of the laboratory are: high voltage supply systems up to 280 kV in alternating and continuous current, heaters for thermal conditioning, climatic cell, linear valve amplifier.
In particular, on electrical insulation systems, I perform dielectric strength measurements, partial discharge measurements using analog and digital systems, capacitance and loss factor measurements, resistance and insulation resistance measurements. Insulation systems range from simple planar solids, to conventional or nanocaricate enamels, to insulation systems of real electrical machines.
I also carry out tests for evaluating resistance to tracking and erosion of electrical insulating materials used under severe ambient conditions.
On magnetic materials, I make measurements for the determination of relative magnetic permeability and measures for the determination of leaks.

Editorial activity

Reviewer of international scientific papers to be published in the IEEE Transactions on Dielectrics and Electrical Insulation journal.

Other professional activities

I am a founding member of the spin-off company Diasol S.r.l. born within the UNI.T.I. Consortium (University, Technology Transfer to Businesses) of the University of Genoa: the company has benefited from the Start Up fund made available by the Consortium for companies with a high technological content. In 2013 the spin off was accredited as a 'spin off of the University of Genoa'