



University of Illinois at Chicago, Electrical and Computer Engineering Department
IEEE Antennas and Propagation & Microwave Theory and Techniques Societies

The equations that changed our world

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Recipient of the IEEE Electromagnetics Award

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Lecture Center F3
802 South Halsted Street
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Host: Prof. Danilo Erricolo, derric1@uic.edu

Abstract

Last year has been the sesquicentennial anniversary of the birthday of the Maxwell Equations, and this year is dedicated to light, still related to these equations. This seminar presents the story of the equations, and their accomplishment till our years. The presentation has been designed for a cultured audience, but does not require any familiarity with electromagnetic phenomena.

In the late seventeenth and eighteenth century, mysterious electric and magnetic different phenomena were exciting curiosity of people, and also interest of some scientists. Their investigation, essentially performed in France and UK, was formalised by two laws, Biot & Savart and Faraday equations.

And then James Clerk Maxwell entered in the arena: a dark penumbra suddenly changed to brilliant light, theoretical results from his new equations were experimentally confirmed, and successive applications implemented.

This Seminar presents the *romance* of Maxwell equations, created and not derived from preliminary experiments, and the successive steps of their usage for a number of applications that changed, and are still changing our physical and social life. At the end of the Seminar, a just one minute additional comment is added: no detail is given here, to hide a thrilling conclusion!

BIOGRAPHY



Giorgio Franceschetti is Emeritus Professor (University Federico II of Napoli, Italy), “Bruno Kessler” Honorary Professor (University of Trento, Italy), and Distinguished Visiting Scientist (Jet Propulsion Laboratory, NASA, USA). He has been Adjunct Professor for 15 years at University of California at Los Angeles (UCLA, 1994 – 2008), and Lecturer (Top Tech Master) at the University of Delft (Holland) till 2010. In addition, he has been Visiting Professor and/or Lecturer in USA, Europe, Somalia, China and India. He is the author of about 200 scientific papers appearing on peer reviewed international scientific journals, and 14 books.

The outstanding level of his scientific activity, in the R&D arena, has been recognised by a large number of Prizes, domestic and International. He received the Gold Medal (2001) and the honorary title *Ufficiale della Repubblica* (Italian Republic Officer, 2000) by the Italian President; the Mountbatten Premium for the best paper (1995-96) on the Proceedings IEE London; the Schelkunoff Prize (twice, 1999 e 2008) for the best paper on the IEEE Transactions on Antennas and Propagation. Furthermore, he got the

Distinguished Achievement Awards from the IEEE Geoscience and Remote Sensing (2007) and IEEE Antennas and Propagation (2010) Societies, as well as the NASA Group Achievement Award (2009). As last outstanding achievement, he received the 2016 IEEE Electromagnetics Award, in the frame of a ceremony chaired by the IEEE President, “For leadership in the academic world, teaching, research, and scientific activities in advanced electromagnetics”. This ultimate Award synthesises, at top level, all his previous accomplishments.