

Mutual coupling: some useful relations, pitfalls and opportunities

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Abstract

The talk will start with a quick reminder regarding antenna theory and a few exact relations regarding mutual coupling. Then, some common approximations will be analyzed in more detail and efficient computation techniques will be presented. Finally, the exploitation of mutual coupling in wideband arrays and metasurface antennas will be exposed.

Bio

Christophe Craeye was born in Belgium, in 1971. He received the master's degree in electrical engineering and the B.Phil. degree from the Université Catholique de Louvain (UCLouvain), Ottignies-Louvain-la-Neuve, Belgium, in 1994, and the Ph.D. degree in applied sciences from UCLouvain in 1998. From 1994 to 1999, he was a Teaching Assistant with UCLouvain and carried out research on the radar signature of the sea surface perturbed by rain, in collaboration with the National Aeronautics and Space Administration (NASA) and European Space Agency (ESA). From 1999 to 2001, he was a Post-Doctoral Researcher with the Eindhoven University of Technology, Eindhoven, The Netherlands. He was with the University of Massachusetts, Amherst, MA, USA, in 1999. He was with the Netherlands Institute for Research in Astronomy, Dwingeloo, The Netherlands, in 2001. In 2002, he started an antenna research activity with UCLouvain, where he is currently a Professor. He was with the Astrophysics and Detectors Group, University of Cambridge, Cambridge, U.K., in 2011. His research was funded by the Region Wallonne, the European Commission, ESA, the Fonds National de la Recherche Scientifique (FNRS), and UCLouvain. His current research interests include mutual coupling, finite antenna arrays, wideband antennas, small antennas, metamaterials, fast physical optics, and numerical methods for fields in periodic media, with applications to communication and sensing systems. Dr. Craeye received the 2005–2008 Georges Vanderlinden Prize from the Belgian Royal Academy of Sciences in 2009. He was an Associate Editor of the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION from 2004 to 2010 and the IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS from 2011 to 2017.