

Metastructures and Superdirectivity

Mario Junior Mencagli⁽¹⁾, Andrea Alù⁽²⁾, and Nader Engheta⁽¹⁾

(1) University of Pennsylvania, Philadelphia, PA 19104, USA

*(2) Advance Science Research Center, City University of New York, New York, NY
10031, USA*

The concept of superoscillations was introduced and developed by Professor Yakir Aharanov and Professor Michael Berry several years ago. The notion of superdirectivity in antennas were also discussed and explored in the antenna and electromagnetics communities decades ago. These two topics were developed independently. However, as discussed by Professor Berry in one of his seminal papers, there is an interesting connection between these two concepts. In this talk, we discuss how metamaterials and metasurfaces can lead us to another connection between superoscillations and superdirectivity phenomena, and possibly facilitate the implementation of these phenomena. During our talk, we will present some of our thoughts on this opportunity and discuss physical insights on these general problems.