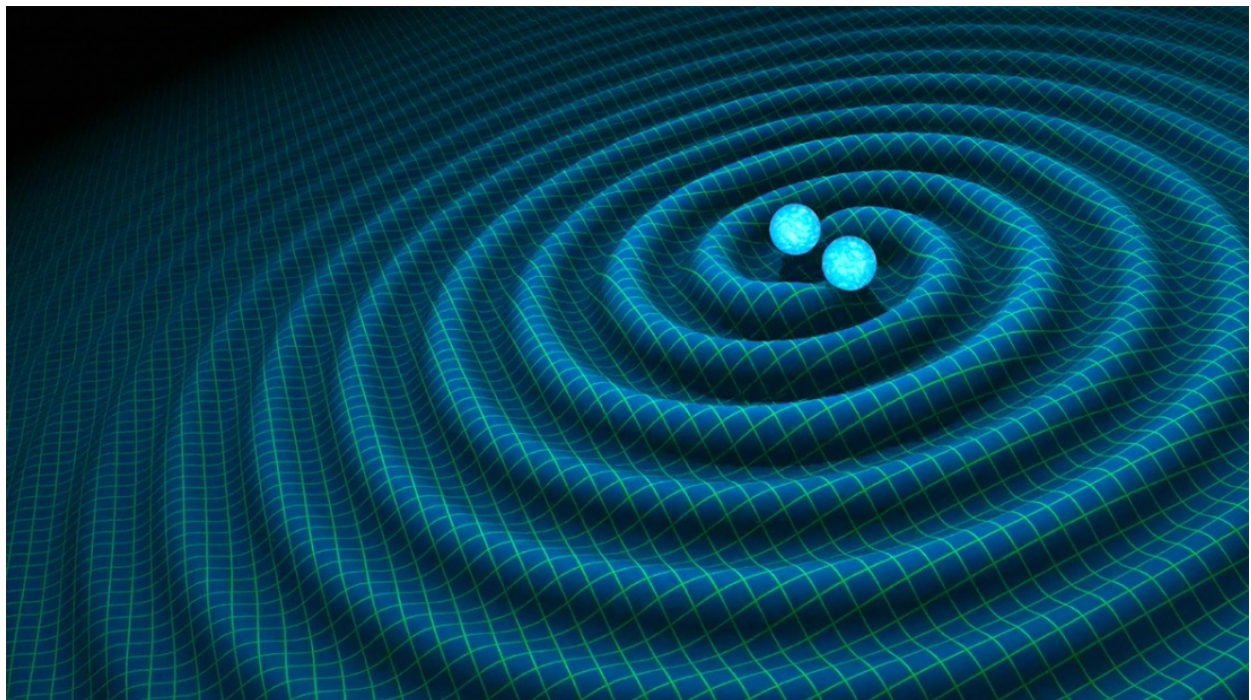Optics and Photonics Group
Lunchtime Seminar

"Electromagnetic surface waves applications: modelling, design and manufacturing"

Luigi La Spada
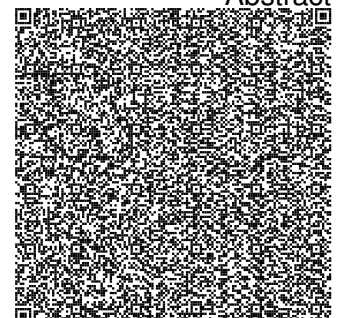
Coventry University

Abstract

1:00pm Thursday 7th November 2017
203 Tower Building
All Welcome

http://optics.nottingham.ac.uk/wiki/Talks_2017

"Electromagnetic surface waves applications: modelling, design and manufacturing"

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The possibility to guide electromagnetic waves along curved structures, without affecting amplitude and phase, is of great importance for practical applications from microwave to optics. During the years, several techniques have been used: smooth transitions and bends; photonic crystals, corner mirrors and resonators. Recently, Meta-Surfaces (MS) emerged as new solutions to manipulate the propagation of electromagnetic waves. The reason behind their success is the possibility to engineer the wave characteristics by using electrically small metal and/or dielectric "inclusions". On the other hand, the rapid development of Transformation Optics (TO) has attracted much attention and interest to correct phase and consequently suppress unwanted reflections/absorption. Despite all such technology advancements and the related manufactured devices, several problems are still present: significant presence of losses, narrow bandwidth, properties difficult to achieve, complexity in the design and experimental realization. As a result, in this work, huge efforts have been put in combining MS and TO advantages to avoid and/or mitigate such issues. In this talk, all the steps (modelling, design and manufacturing) will be considered and interlinked each other: from the initial specifications to the final realization and validation of surface wave devices. The approach can be easily used to control electromagnetic waves propagation along flat and curved surfaces, bringing lots advantages in different applications: sensing, absorbers, antennas and cloaking.