

GIOVANNI S. ALBERTI (UNIVERSITY OF GENOA, ITALY)

ESSENTIAL SPECTRUM FOR MAXWELL'S EQUATIONS

This is joint work with M. Brown, M. Marletta and I. Wood. We study the essential spectrum of operator pencils associated with anisotropic Maxwell equations

$$\begin{cases} \operatorname{curl} H = -i(\omega\varepsilon + i\sigma)E & \text{in } \Omega, \\ \operatorname{curl} E = i\omega\mu H & \text{in } \Omega, \\ E \times \nu = 0 & \text{on } \partial\Omega, \end{cases}$$

with electric permittivity ε , magnetic permeability μ and conductivity σ , in a finitely connected unbounded domain Ω . The main result is that the essential spectrum of the Maxwell pencil is the union of two sets: namely, the spectrum of the pencil $\operatorname{div}((\omega\varepsilon + i\sigma)\nabla \cdot)$, and the essential spectrum of the Maxwell pencil with constant coefficients. We expect the analysis to be of more general interest and to open avenues to investigation of other questions concerning Maxwell's and related systems.