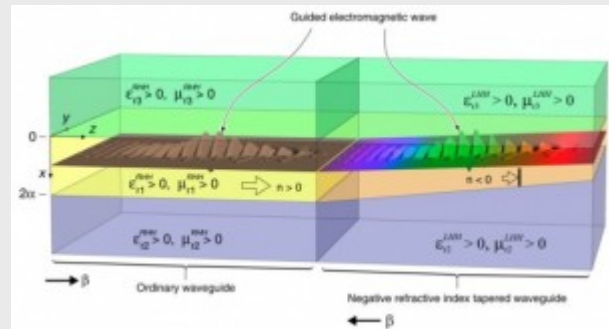


Modelling of Active Plasmonic and Metamaterial Systems in the Time-Domain

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ABSTRACT:

Advances in plasmonics and metamaterial research increasingly focus on device-functionalization with quantum-electronic materials, such as dyes, semiconductors or graphene. The field concentration around metallic nano-features serves as key mechanism to enhance light-matter interactions but also poses new modelling challenges. The presentation will highlight recent results based on the self-consistent modelling of photonic/quantum-electronic structures, such as gain-infiltrated active metamaterial structures. In addition it will offer an outlook to future work on the modelling of quantum-electronic metamaterials that include semiconductor media and graphene.