



COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electronics and Communications Engineering, Cairo

Graduation Project Description Form

Project Title: Metamaterial Black hole

Duration from mo/year _____ till mo/year _____

Project Supervisor(s): Dr Hussien Ghoz

Product Category

Algorithm _____ Hardware _____ Software _____

Standards:

Safety: UL, CE _____ IEEE _____ FCC _____ Other _____

Practical Realization Form

PCB _____ Firmware _____ Embedded CPU Kit (ARM, ..etc): _____

PC Software _____ Ready-made Package _____ DSP Kit _____ FPGA Kit _____

VLSI Schematics _____ VLSI Layout _____ VLSI Silicon (ASIC) _____

Language

VHDL/Verilog _____ Matlab _____ C/C++/Java _____

Productization

Finished Product Form: _____ Possible Commercialization _____

Amount of funds needed for buying components: _____

IEEE GOLD Made-In-Egypt/Engineering Day: _____

ITAC (ITIDA) or NTRA Funding Application: _____

Testing

Functional _____ Simulation _____ Parameters _____ Final Hardware _____ Other: _____

Lab Test Setup

EMC _____ Environmental _____ Microwave _____ Analog Lab _____ Other: _____

CAD Tools *(No unauthentic software is allowed):*

Elective Classes Required:



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Abstract

Metamaterials are artificial materials engineered to have properties that may not be found in nature. While a black hole is a region of space-time from which gravity prevents anything, including light, from escaping. Through combining the theories of metamaterial, our aim is to create an artificial black hole through studying it's proprieties and the parameters which would help to create it and make it work in optical and electromagnetic bands. Our design of Black hole is performed at a certain operating frequency within the optical spectrum. This design will be simulated via a simulation tools, e.g. Comsol Multiphysics, Lumerical and CS Studio.



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References and Links