Computational Electromagnetics

A project in Research for Innovation

Partners:
HMS, NIBE, AES, GUTEC, Halmstad University

Knowledge Foundation

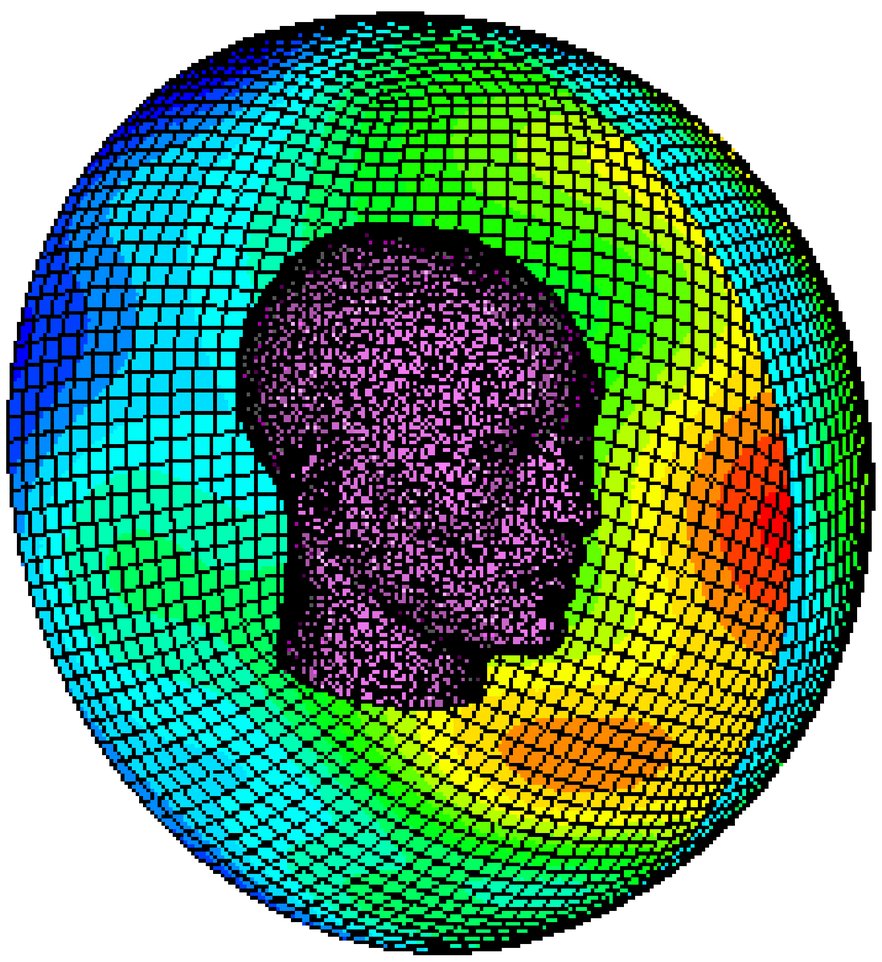
Background

Successful modern competitive product development of for example cars, computers, cell phones, wind turbines and medical equipment would be unthinkable without the aid of advanced mathematical modeling and computers!

Today's requirements, such as sustainable, reliable, energy efficient, cheap and with great design at ever shorter development times, places high demands on tools that can cut lead time and eliminate time-consuming and costly test series.

Goals

The goals are to develop and apply modern finite element techniques in early design stages. Especially focusing on electromagnetic design problems for IoT applications, e.g. electromagnetic compatibility, antenna design, antenna integration, building practice and electronic packaging.



$$\nabla^2\psi + \lambda\psi = \Phi$$

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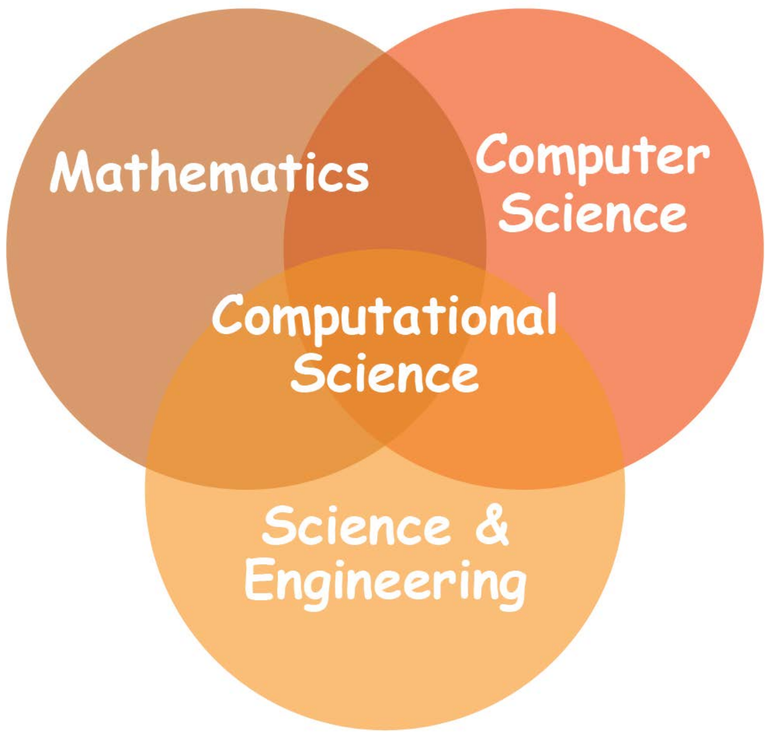

Publications

[-] E. Burman and P. Hansbo. Fictitious domain finite element methods using cut elements: I. A stabilized Lagrange multiplier method. Comput. Methods Appl. Mech. Engrg., 199(41-44):2680–2686, 2010.

[-] E. Burman and P. Hansbo. Fictitious domain finite element methods using cut elements: II. A stabilized Nitsche method. Appl. Numer. Math., 64(4):328–341, 2011.

[-] E. Burman, P. Hansbo, and M.G. Larson. A stabilized cut finite element method for partial differential equations on surfaces: The Laplace-Beltrami operator, Comput. Methods Appl. Mech. Engrg. 285:188-207, 2015.

Contact Information

Bertil.Nilsson@hh.se

hh.se

HALMSTAD UNIVERSITY