

Optimization of layered structures using high order finite elements

Project Characteristics

Mechanics: ★★★★★
Mathematics: ★★★★★
Programming: ★★☆☆☆

Setting

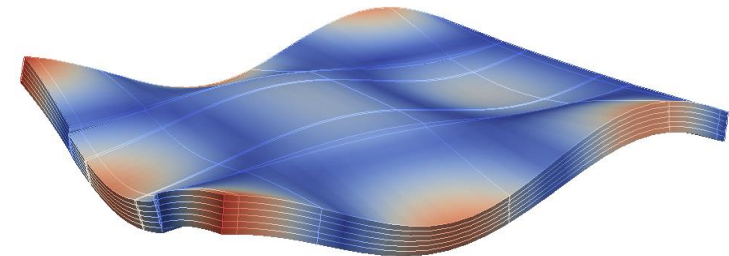
Hexahedral high order finite elements can be used to solve structural optimization problems of layered structures efficiently. Design variables are:

- layer thicknesses,
- material orientations,
- volume fractions of composite components.

Your Tasks

Develop a software to optimize layered structures by extending the high order finite element program AdhoC:

- Derivation of elasticity tensors of anisotropic composites
- Generation of extruded three-dimensional meshes
- Application and comparison of different optimization methods



Programming language: Matlab, C