

Git Project: Image Analysis and FEM

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0.1 Introduction

Simple finite elements in Python (SfePy) uses finite element methods to solve coupled partial differential equation (PDE) in systems up to three dimensions. SfePy is a powerful software that allows complex physical problems to be coded quickly and easily. It has been used successfully in a variety of disciplines, ranging from biomechanical modelling [?] to the computational analysis of acoustic transmission coefficients [?].

In this report, the input file to the SfePy software is a microstructural image which must first be 'cleaned' through segmentation, mesh generation and noise reduction. It can then be imported into the software as a mesh file, where boundary and initial conditions are applied. Fields are then created which can be used to define variables which may be 'unknown field', 'test field' or 'parameter field' [?] and the material properties are defined.

0.2 Aims and Objectives



0.3 Image Analysis

Test!

0.4 Finite Element Modelling

Test!

0.5 Results

Test!