

Computer lab
Numerical Methods for Thin Elastic Sheets
Summer term 2013
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Problem sheet 1

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Before you start, please copy the file *examples/linearTriangFE.cpp* to your project folder *projects/[project_name]*. You are now free to comment, edit, etc. .

- (i) Make your self familiar with the *quocMesh*-Library by studying the example *linear-TriangFE.cpp*. In this example we study the problem

$$\begin{cases} -\Delta u = f, & \text{in } \Omega = (0,1)^2 \\ u = 0, & \text{on } \partial\Omega, \end{cases}$$

where $f = \lambda u_0 = 2\pi \sin(\pi x) \sin(\pi y)$.

- (ii) Using this example you shall now study the problem

$$\begin{cases} -\Delta u + cu = 0, & \text{in } \Omega = (0,1)^2 \\ \frac{\partial u}{\partial n} = 0, & \text{on } \partial\Omega, \end{cases}$$

where $\frac{\partial u}{\partial n} := \langle \nabla u, n \rangle$ with a normal n on $\partial\Omega$ and $c := 2\pi$. What is the exact solution of this problem?