Institute of Scientific Computing
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Winter Term 2018/19
Assignment 12
Due date: 25.01.2019

Introduction to Scientific Computing

Exercise 1: Homotopy method **36 points**

(a) Implement both of the homotopy methods, which means the first with $G = \mathrm{Id}\,x$ and the second using $H = F - F(\vec{x}_1)$. (18 points)

(b) Comment (in the end of the main.m file) the behavior of the solutions you get running the SVN program, i.e. in which way and under which circumstances the homotopy methods have some better properties? (8 points)

(c) Implement predictor corrector method. You are allowed to do the predictor step the simplest way: solve

$$D_{\vec{x}} H \vec{z} = -\partial_s H$$

and then use $\vec{z} = d_s \vec{x}$ in Euler-Forward solver. (10 points)