Bernoullis Tafelrunde

Graduate Student Seminar

Thursday, 28 May, 12:15-13:00
Seminarraum 05.002, Spiegelgasse 5

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Local Exponential Runge-Kutta Methods

Abstract

Exponential Runge-Kutta Methods are used in numerical analysis to solve differential equations. However, they require the calculation of matrix exponentials of very large matrices, which is very storage intensive and may not meet our accuracy conditions. We give an account on a local variant of these methods, where we apply them on a grid with one region that has a very small local refinement. This allows us split the approximation in a coarse and a fine part, such that we have to calculate the arising matrix exponentials only on the fine part. Additionally, the size of the time step will only depend on the coarse part, such that we may save even more calculating time.