DRWA11

Dolomites Research Week on Approximation 2011

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Working group: Exponential integrators
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Exponential integrators form a well-established class of numerical methods for the time integration of stiff differential equations, such as parabolic initial-boundary value problems. In contrast to standard numerical schemes like implicit RungeKutta methods, they make use of exponential (and related) functions of a large matrix (the Jacobian matrix of the system). More precisely, they require the action of these matrix functions on a given vector. In this working group we will start with a brief introduction to the theory and implementation of exponential integrators.

Particular emphasis will be led on meshfree implementations with radial basis functions and on the efficient computation of the above mentioned matrix functions. In addition to planned tutorials, we offer the participants the possibility to present their own research results on the basis of contributed talks, of about 30 minutes, and posters.