

PHYSIKALISCHES KOLLOQUIUM

Wintersemester 2023/24

Das Kolloquium findet (soweit unten nicht anders angegeben) jeweils montags **jeweils montags um 17:15 Uhr online via Zoom** statt.

(Der jeweilige Link wird noch zur Verfügung gestellt.).

27.11.2023

Vorstellungsvortrag im Rahmen des Habilitationsverfahrens

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Sustainable software development in an academic environment

Abstract

The use of numerical methods in software packages in academia often rests on algorithmic developments in linear algebra or ordinary differential equations (ODEs). A concept tying both together is the technique of operator splitting methods. Operator splitting methods are an effective method for the solution of linear, autonomous ODEs, the most widely employed method being the leapfrog integrator that is most famously being used for the numerical solution of classical Hamiltonian systems.

In this talk we will introduce splitting methods, present recent developments in this field that affect the performance of software and explore selected generalizations. We will argue, that optimizing this class of methods leads to more efficient software for numerical applications and give examples where a speedup could be obtained. We will close with a software package to make some of these developments available in order to enable an easy optimization to the physical problem at hand.

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Assaad, Prof. Dr. Hinrichsen, Prof. Dr. Pflaum und Hr. Kuhr