

Sonderforschungsbereich 611

Singuläre Phänomene und Skalierung in
mathematischen Modellen

Einladung zu einem Vortrag im SFB-Seminar

Prof. Dr. Rupert Klein

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spricht zum Thema

**Sound-proof approximations for meteorological fluid
dynamics as an asymptotic three-scale problem**

Zeit: Dienstag, den 14. Juni 2011, 17.00 Uhr

Ort: Kleiner Hörsaal, Wegelerstr. 10

Kaffee/Tee: 16.30 Uhr

gez. Michael Griebel

Abstract: Air is a compressible medium. Yet, experience shows that sound waves play a negligible role in the vast majority of meteorologically relevant atmospheric processes. Nevertheless, the family of sound-proof flow models, which correspond to the incompressible or zero-Mach number approximations in engineering fluid mechanics, has met with severe scepticism from a large fraction of the meteorological community since they were first introduced many decades ago. In this lecture I will elucidate reasons for this scepticism, explain that a thorough analysis of nearly sound-free atmospheric flows involves a non-standard asymptotic three-scale problem, discuss formal estimates of the range of validity of available sound-proof models, and describe ongoing research aiming at an associated rigorous proof.