

Operator theory and applications

(Christiane Tretter, University of Bern, Switzerland)

The theory of linear operators is an important tool to investigate the stability of physical systems or their time evolution. In turn, applications from physics and engineering have contributed considerably to the advances of operator theory. The most prominent example of this fruitful interaction is the interplay between quantum mechanics and the theory of self-adjoint operators in Hilbert spaces.

In this talk more recent applications of operator theory are presented, including magnetohydrodynamics and hydrodynamics. Special attention is paid to non-selfadjoint eigenvalue problems. Here numerical calculations may fail to produce reliable results and, thus, rigorous analytical information provided by operator theoretic methods is highly desirable.