June 14, 2007

Bisectorial Operators: Spectral Theory and Parabolic Equations

by

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An operator A on a Hilbert space is invertible and bisectorial if and only if the Problem

$$\dot{u}(t) = Au(t) + f(t) \quad (t \in I\!R)$$

is L^p-well posed. We also discuss UMD-spaces where the characteristic conditon is R-bisectoriality. For C^α-maximal regularity no further condition is needed. Bisectorial operators may be complicated since the canonical spectral projection is since the canonical spectral projection unbounded in general, even on Hilbert space. Still, we are able to show that A^2 is always sectorial. The talk is based on several articles:

1. W. Arendt, C. Batty, S. Bu: *Fourier multipliers for Hölder continuous functions and maximal regularity.* Studia Math. **160** (2204), 23–51.

2. W. Arendt, S. Bu: *Sums of bisectorial operators and applications.* Integr. Equ. Operator Th. **52** (2005), 299–321.

3. W. Arendt, M. Duelli: *Maximal L^p-Regularity for parabolic and elliptic equations on the line.* JEE **6** (2006), 773–790.

4. W. Arendt, A. Zamboni: *Decomposing and twisting bisectorial operators.* Preprint.

5. A. Zamboni: *Bisectorial Operators and Optimal Regularity in Evolution Equations.* PhD Thesis, Milano 2006.