

# Seminar on Boundary value problems for first order elliptic operators

Summer Term 2011

Prof. Bernd Ammann

Dates: 2.5., 9.5., (not 16.5.!), 23.5., 30.5., 6.6., 20.6., 27.6., 4.7. (?), 11.7., 18.7., 25.7. (10-11 Sessions)

In the first part of the seminar we follow the article [1]. The seminar will start on May 2nd. After a short discussion about how to go on, we start with the first talk. We skip the Introduction which is essentially a summary of the article. We also skip the Preliminaries section: when the speakers will use the material from section 2 they are asked to recall it when needed.

**Vortrag 1.** *Completeness.*

2.5.[1, Section 3]

**Vortrag 2.** *Normal form.*

9.5.[1, Section 4]

**Vortrag 3.** *Trace theorem and the Model operator.*

23.5. Introduce the classical trace theorem, used in [1, Facts 5.4(v)]. For this you can either follow the reference of Adams, cited in [1], or [2, Chapter 4, Proposition 1.6]. Then explain [1, Section 5, pp 25–30].

**Vortrag 4.** *The maximal domain.*

30.5. and 20.6. [1, Section 6, pp 30–40].

**Vortrag 5.** *Boundary value problems.*

(27.6) and (4.7. or 11.7.) [1, Section 7, pp 40–58] (maybe two sessions?)

**Vortrag 6.** *Index theory, Relative Index theorem, Cobordism Theorem.*

18.7. and 25.7. [1, Section 8, pp 58-73] plus applications mentioned in the Introduction (maybe two sessions?)

## Seminar-Homepage

[http://www.mathematik.uni-r.de/ammann/lehre/2011s\\_\\_boundval](http://www.mathematik.uni-r.de/ammann/lehre/2011s__boundval)

## Literatur

- [1] C. Bär, W. Ballmann, *Boundary value problems for elliptic differential operators of first order*, ArXiv: 1101.1196
- [2] M. Taylor, *Partial differential equations, Basic theory*, Springer Texts in Applied mathematics, Second edition, 1999