

# A Mathematical Introduction to Modern Physics

## Reading Seminar in the Summer Term 2018

We will read and discuss the first six chapters of the book

#### Glimm and Jaffe: Quantum Physics (A functional integral point of view)

These six chapters constitute part 1 of the book and give an introduction to modern physics. According to the authors: "It is designed to make the treatment of physics selfcontained for a mathematical audience; it covers quantum theory, statistical mechanics and quantum fields. Since it is addressed primarily to mathematicians, it emphasizes conceptual structure – the definition and formulation of the problem and the meaning of the answer – rather than techniques of solution. Because the emphasis differs from that of conventional physics texts, physics students might find this part a useful supplement to their normal texts. In particular, the development of quantum mechanics through the Feynman-Kac formula and the use of function space integration may appeal to physicists who want an introduction to these methods."

As the physics and mathematics covered in those chapters is quite tense, this will not be an easy reading. Background on physics and stochastics are helpful, whereas functional analysis knowledge on the level of our "Funktionalanalysis" classes is indispensable.

This will be a reading seminar, meaning: each week we cover half a chapter. Each participant will read this in advance and be prepared to present pieces of it and take part in the discussion. We will not be able to cover everything in detail, but we have to make choices where to talk about the general ideas and where to check the details.

### Time and Place: Tuesdays, 14-16, SR 6

Vorbesprechung: There will be a first (mainly organizational) meeting on

#### Tuesday, January 30, 2:15 pm, in SR 8 (room 318, E2 4)

Questions concerning the seminar can be put to Tobias Mai (room 225, mai@math.uni-sb.de) or Roland Speicher (room 201, speicher@math.uni-sb.de); see also

http://www.math.uni-sb.de/ag/speicher/lehre.html