Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

MUΦX
Lehrstuhl

Im Oberseminar

Deformationsquantisierung

spricht am **18.03.2015 um 15 Uhr c.t.,**

im Seminarraum 00.009 (Physik Ost)

Peter Bongaarts

über das Thema:

Quantum Theory. A Mathematical Approach

In the past physics and mathematics were twin sciences. Newton ex- celled both in physics and mathematics. In the last half of the 19th and the first half of the 20th century mathematicians were deeply interested in new developments in physics and made important contributions. Think of Hilbert, von Neumann, Weyl, Cartan, van der Waerden. This is a thing of the past. Reasons? The Bourbaki movement which led to a more 'abstract' formulation of mathematics, which the physicists did not follow? Increasing specialization, coupled to publication pressure, which leads to short time research and prevents people from looking across the boundaries of their fields? The present generation of mathematicians does in general not know much of physics, in particular not much about recent developments. My claim is that the principles of the great new theories of 20th century physics, quantum theory and relativity, are easy to understand for mathematicians. The essential mathematical structure of these theories is simple. Mathematicians have sufficient familiarity with the advanced mathematics needed for this, differential geometry for relativity and functional analysis for quantum theory. Physicists lack this grasp, so they have to learn quantum mechanics, for instance, as a sequence of at first seemingly disconnected facts. Mathematicians who try to learn physics have a hard time; physics textbooks are inaccessible to them, because of the intuitive, heuristic, sloppy, and for them old fashioned mathematical language that is used. Mathematicians should be taught the principles of quantum theory in mathematical language. I did just that in a book that I published at the end of last year: "Quantum Theory. A Mathematical Approach". My lecture will be based on this book. This means that I shall give a short introduction to the main principles of quantum theory, in mathematical language.

gez. Stefan Waldmann