Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

MUΦX
Lehrstuhl X

Announcement

Seminar on Deformation Quantization

21. 7. 2023 at 3.30 pm CEST

Seminarroom SE 30

Paul Beyer (JMU Würzburg)

The Search for a Kähler Structure on the Cotangent Bundle of a Lie Group

In a first part we want to show how the well-regarded construction of a Wick star product by Fedosov can be achieved on a Kähler manifold as well. This product is then compatible with the complex structure of the Kähler manifold and the left- and right-multiplication with holomorphic and anti-holomorphic maps becomes locally the pointwise product. Furthermore, the usual way of translating between the Wick and Weyl product can be achieved here explicitly.

After this motivational part I will report about what became the main quest of my Master's Thesis: Applying this construction to the cotangent bundle of a Lie group. For this, off course, one needs a Kähler structure. The process of finding one turned out to be not as easy as expected, unfortunately. The first intuitive tries did not work out and it took some time to notice that there is a diffeomorphism between the cotangent bundle and the complexification of the underlying Lie group. The problem was that the pullback of the canonical complex structure of the complexification actually yields a different Lie group structure than what we were expecting.

Invited by Stefan Waldmann