Deformationsquantisierung

Am 5. 6. 2020 spricht um 14 Uhr c.t.

https://bbb.durates.net/b/ste-2va-uez

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A Possibly Trivial Strict Deformation Quantization

Lie groups are ubiquitous in mathematical physics. For example, the mechanics of a rigid body can be described by the cotangent bundle of the product of Lie groups $\mathbb{R}^n \times \mathrm{SO}(n)$. As Lie groups admit for a global frame by left translation, many constructions involved in their quantization simplify compared to general cotangent bundles. In this talk, we discuss a new example of a strict deformation quantization of a suitably chosen and possibly trivial Poisson subalgebra of the polynomials $\mathrm{Pol}(T^*G) = \mathscr{C}^\infty(G) \otimes \mathrm{Pol}(\mathfrak{g}^*)$. This factorization allows us to build on a strict deformation of the Gutt star product on Lie algebras worked out by Stapor in 2016. Along the way, we review the first factor in detail and key properties of the second one. Furthermore we encounter projective tensor products, the half-commutator covariant derivative and the associated standard ordering. Their study ultimately results in a direct continuity estimate for the corresponding star product. Finally, we discuss some of our current ongoing attempts at ensuring the subalgebra we use is non-trivial, illustrated by examples from the flat case.

gez. Stefan Waldmann