

Deformation quantization on the cotangent bundle of a Lie group

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We present a complete theory of non-formal deformation quantization on the cotangent bundle of a Lie group. An appropriate integral formula for the star-product is introduced together with a suitable space of functions on which the star-product is well defined. This space of functions becomes a Fréchet algebra as well as a pre- C^* -algebra. Basic properties of the star-product are proved and the extension of the star-product to a Hilbert algebra and an algebra of distributions is given. A C^* -algebra of observables and a space of states are constructed. Moreover, an operator representation in position space is presented.