Bordemann, Martin; **Römer, Hartmann**; **Waldmann, Stefan**
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Summary: The concept of KMS states used to describe thermodynamics is transferred to deformation quantization by defining formal KMS states on the star product algebra of formal power series in $\hbar$ with coefficients in the smooth functions with compact support on phase space endowed with a star product. Then we prove the existence and uniqueness of these KMS states in the case of a connected phase space for any inverse temperature β, and show that they can be described in terms of the star product trace and a certain star exponential analog to the usual Boltzmann factor resulting a formal analogue of the Gibbs states.

MSC:

81S10 Geometry and quantization, symplectic methods
53D55 Deformation quantization, star products

Keywords:

deformation quantization; existence and uniqueness; formal analogue of the Gibbs states

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