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OSSIETZKY
*universität* OLDENBURG
**FAKULTÄT V**
MATHEMATIK UND
NATURWISSENSCHAFTEN

**Institut für Physik**

# Theoriekolloquium

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Am **19. Mai 2016** um **14.15 Uhr** in **W2 1-143** hält


**Herr Dr. Christian Pfeifer (Bremen und Hannover)**


einen Vortrag mit dem Titel


**The Potential in General Linear Electrodynamics:
Causal Structure, Propagators and Quantization**

From an axiomatic point of view, the fundamental input for a theory of electrodynamics are Maxwell's equations dF=0 (or F=dA) and dH=J, and a constitutive law H=# F, which relates the field strength 2-form F and the excitation 2-form H. In this talk we consider general linear Electrodynamics, the theory of Electrodynamics which is defined through a liner constitutive law. The best known application of this theory is the effective description of Electro-dynamics inside (linear) media including for example birefringence. We will analyze the classical theory of the electromagnetic potential A thoroughly before we use methods familiar from mathematical quantum field theory in curved spacetimes to quantize it. Our analysis of the classical theory contains the inversion of the principal symbol of the field equations, the construction of the causal structure on the basis of the constitutive law, which replaces the metric one uses in Maxwell Electrodynamics, the construction of the inverse of the field equations and the Puli-Jordan propagator and the classification of the classical symplectic phase space of the theory. This classical analysis then sets the stage for the construction of the quantum algebra of observables and quantum states.




Interessierte sind herzlich eingeladen.


gez. Prof. Dr. Claus Lämmerzahl