

## TRR Guest Scientist Lecture / Seminar

Date/Time: Monday, 20.08.2018 / 13:00 Uhr  
Location: Paderborn  
Lecture Hall A2

### Prof. Dr. John E. Sipe

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## Why you should not use the electric field to quantize in nonlinear optics

### Abstract:

We show that using the electric field as a quantization variable in nonlinear optics leads to incorrect expressions for the squeezing parameters in SPDC and conversion rates in frequency conversion. This observation is related to the fact that if the electric field is written as a linear combination of boson creation and annihilation operators one cannot satisfy Maxwell's equations in a nonlinear dielectric.

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