



# ***EINLADUNG***

im Rahmen des Literaturseminars

zum Vortrag

von

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(Vienna)

über

***„The gravitational field of a laser pulse“***

**ABSTRACT:**

As Einstein's equations tell us that all energy is a source of gravity, light must gravitate. However, because changes of the gravitational field propagate with the speed of light, the gravitational effect of light differs significantly from that of massive objects. In particular, the gravitational force induced by a laser pulse is due only to its creation and annihilation and decays with the inverse of the distance to the pulse. We can expect the gravitational field of light to be extremely weak. However, the properties of light are premises in the foundations of modern physics: they were used to derive special and general relativity and are the basis of the concept of time and causality in many alternative models. Studying the back-reaction of light on the gravitational field could give new fundamental insights to our understanding of space and time as well as classical and quantum gravity. In this talk, a brief overview is given of the gravitational field of laser pulses in the framework of linearized Einstein gravity. A glimpse is caught of the gravitational interaction of two single photons, which turns out to depend on the degree of their polarization entanglement.

**Zeit:** Donnerstag, 27.4.2017, **14:00**

**Ort:** Arbeitsgruppe Gravitation, Währinger Straße 17, **Raum 218**,  
2. Stock

gez.: P. Chrusciel