



# ***E I N L A D U N G***

## **Lunchseminar**

zum Vortrag

von

**Philipp Höhn**

(Vienna)

über

***“Can chaos be observed in quantum gravity?”***

**Abstract:**

Full general relativity is almost certainly 'chaotic'. I will argue that this entails a notion of nonintegrability: a generic general relativistic model, at least when coupled to cosmologically interesting matter, is likely to possess neither differentiable Dirac observables nor a reduced phase space. The standard notion of observable then has to be extended to include non-differentiable observables. This has severe repercussions as such observables cannot carry Poisson-algebraic structures and do not admit a standard quantization; one thus faces a quantum representation problem of gravitational observables. Nevertheless, in certain cases, one can explicitly quantize such systems. By means of toy models, I will discuss general challenges and some surprising consequences for the quantum theory of nonintegrable constrained systems which presumably will also appear in canonical quantum gravity. Based on arXiv:1602.03237, 1508.01947.

**Zeit:** Donnerstag, 2.2.2017, **13:00**

**Ort:** Arbeitsgruppe: Gravitation, Währinger Straße 17,  
common room 1. Stock

gez.: P. T. Chrusciel