



# INVITATION

as part of the Mathematical Physics Theory Seminar

to the talk by

**Christian GASS**  
(University of Vienna)

on

***“Propagators in curved spacetimes from operator theory“***

**Abstract:**

I will present two distinct operator-theoretic settings, which are useful for describing (or defining) propagators associated with a scalar Klein-Gordon field on a Lorentzian manifold  $M$ . The first setting is based on the Hilbert space of square integrable functions on  $M$  and leads to the definition of an "operator-theoretic Feynman propagator". The second setting is based on the Krein space of solutions of the Klein-Gordon equation and leads to a rigorous definition of two-point functions associated to two (possibly different) states. When  $M$  admits a reasonable definition of "out" and "in" states, the operator-theoretic Feynman propagator from the first setup typically corresponds to the time-ordered two-point function from the "in" to the "out" state in the second setup.

After a general introduction, I will discuss several examples -- the one with the richest structure being de Sitter space.

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**Time: Tuesday, 26 November 2024, 2:00 p.m.**

**Location: Erwin-Schrödinger Lecture Hall, 1090 Vienna, Boltzmannngasse 5, 5<sup>th</sup> floor**