MATHEMATICAL PHYSICS SESSION (FRI 9/1/26)

ROOM S204 (12.45-15.35)

Nikolay Barashkov (MPI-MiS Leipzig)
***Φ^4_3 as a Markov field* (12.45-13.05)**

Random Fields which posses the Markov Property have played an important role in the development of Constructive Field Theory. They are related to their relativistic counterparts through Nelson Reconstruction. In this talk I will describe an attempt to understand the Markov Property of the Φ^4_3 measure in 3 dimensions. This is joint work with T.Gunaratnam.

Toni Annala (University of Toronto)
***Quantum Computing Today: A Brief Status Update* (13.15-13.35)**

I will give an overview of several recent advances in verifiable quantum computation, including Quantinuum's protocol for remotely generating certified random numbers and Google's experiment on estimating out-of-time-ordered correlators (OTOCs). I will also comment on how these developments can be used in scientifically interesting ways. Finally, I will discuss the role of QMill, a new Finnish quantum-algorithm startup, and explain how it fits into this rapidly evolving landscape.

Niko Jokela (University of Helsinki)
***Boundary mathematician as an AdS disentangler* (13.45-14.05)**

I will discuss some recent advances in making progress in reconstructing the gravity dual to boundary field theory. Such advances are made possible thanks to techniques developed by inverse mathematicians, now interpreted within the AdS/CFT framework

Jiasheng Lin (Aalto)
***Twist Operators in CFT and Zeta Determinants* (14.15-14.35)**

I will introduce the so-called "twist operator" of a CFT on a Riemann surface with one motivation. Then I will explain how this can be related, in the case of the free Boson, to the Zeta determinant of the self-adjoint Laplacian on a "slit domain" with twisted boundary conditions. We expect that this will lead to rigorous (probabilistic) constructions of such operators via path integrals.

Kalle Koskinen (GSSI L'Aquila)
***Effective dynamics for weakly interacting bosons in an iterated high-density thermodynamic limit* (14.45-15.05)**

A fundamental problem in quantum many-body theory is the persistence of Bose-Einstein condensation under time evolution in the appropriate large particle number limit. This problem has been solved in a variety of contexts, including the mean-field regime and the weakly interacting case, leading to the Gross-Pitaevskii equation. In this talk, we will discuss the aforementioned persistence problem in a context where we can naturally introduce the notion of volume and density of the system. Subsequently, we will be able to study the problem in an iterated double limit where we first let the volume of the system grow to infinity while keeping the density fixed, and only then allow the density to grow to infinity. This talk is based on joint work with Daniele Ferretti.

Thomas Wasserman (Aalto)

Continuous Tensor Categories in Mathematical Physics **(15.15-15.35)**

I will explain how symmetries in low-dimensional Quantum Field Theories are captured by tensor categories. This is well-developed for finite (sometimes called rational) tensor categories of symmetries. I will discuss work in progress extending this to the setting of tensor categories with infinitely many building blocks and indicate its relevance to central charge $c = 1$ Conformal Field Theories