



Department of  
Theoretical Physics

# THE QUANTUM SPACETIME SEMINAR SERIES

## Modular invariance as completeness

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**Date:** October 21, 2024

**Time:** 4.30 PM IST

**Venue:** AG 80

Zoom link shall be shared separately



Completeness of a QFT has a precise description in algebraic terms as the property of Haag duality. For two dimensional CFT's this completeness is shown to be equivalent to the S modular invariance of the theory. We will show this using the Renyi entropies that are information measures on algebras which are connected to partition functions. Some particular limits of the torus partition function and the Renyi entropies give a purely kinematical number, an index, that measures the amount of incompleteness present in the model. We will show some examples with finite and infinite index. Some results can be extrapolated to higher dimensions allowing to diagnose incompleteness of a CFT in terms of its spectrum.