

# Integrals of Meromorphic Jacobi Forms and Mock/False Modular Forms at Higher Depth (Caner Nazaroglu)

*Friday, 17 February 2023 09:30 (1h 30m)*

Integrals involving meromorphic Jacobi forms appear in physical applications such as black hole counting,  $N=2$  Schur indices, and elliptic genera of 2D CFT's with non-compact target space. In this talk, I will review a number of such applications and describe how they can lead to mock and false modular forms at higher depth. Next, I will describe joint work with Bringmann, Kaszian, and Milas that gives a methodical exploration into modular properties of false theta functions based on concepts developed for higher depth mock modular forms. I will then give examples on how such generalized modular properties can be used to obtain Rademacher type exact formulae for the Fourier coefficients of (higher depth) false/mock modular forms. Finally, I will explain how the modular framework generalizes to a certain subclass of theta functions that are both indefinite and false using Zwegers' mock Maass theta functions and comment on further interrelations and developments (based on joint work with Bringmann).