Bologna Workshop on:
CFT AND INTEGRABLE MODELS
and their applications from gauge/gravity dualities to statistical mechanics and quantum information

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Extracting 3D CFT Data from Thermal Correlators

Tuesday 2 September 2025 13:30 (30 minutes)

I will describe how correlation functions of a conformal field theory placed on the thermal geometry $S^1 \times S^2$ can be used to obtain precise information about flat space CFT data, namely the spectrum and the OPE coefficients of primary operators. The focus will be primarily on thermal one-point functions. Although exact formulas for thermal one-point blocks are not known in this setting, I will explain how the Casimir equation they satisfy provides enough control to obtain series expansions of blocks in different regimes of their parameter space, as well as to derive an inversion formula that expresses OPE coefficients in terms of thermal one-point functions. These tools enable us to extract information about OPE coefficients across the entire spectrum of exchanged operators, combining exact data for low-lying operators with systematic asymptotic expansions in the heavy exchange regime. I will illustrate these results using the free theory as an example.

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