Physics Seminar: Andrew O'Bannon

Title: Trace Anomalies of Boundaries and Defects

Abstract: Conformal Field Theories (CFTs) in even spacetime dimensions are characterized, in part, by trace anomaly coefficients- the coefficients of curvature invariants in the (expectation value of the) trace of the stress tensor. These coefficients often appear in various physical observables, such as stress tensor correlators, thermal entropy, universal contributions to entanglement entropy, and more. Some of them also obey powerful non-perturbative constraints, such as c-theorems. However, what if the CFT has a boundary or defect? How do these change the trace anomaly? Do they produce new terms in the trace anomaly, and if so, then do these new trace anomaly coefficients appear in physical observables, and do they obey any constraints? In this talk, I will summarize the state of the art and the open questions in the our understanding of boundary and defect trace anomalies, with emphasis on two- and four-dimensional boundaries and defects.