TEP Seminar

UCLA

Tuesday, November 10th @ 3pm
Schwinger Lounge
Hosted by Prof. Thomas Dumitrescu

"Do null defects dream of conformal symmetry?"

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Abstract: Lightlike line defects appear in a number of places in theoretical physics, from null Wilson lines, to impurities moving at the speed of sound in a material, and as exponentials of light-ray/detector operators. Surprisingly, little is known about their existence and correlation functions.
In this talk, I will discuss some progress towards understanding null line defects in Lorentzian CFTs. I will start by reviewing their large symmetry algebra then comment on the strong constraints for correlation functions. The (3+1)d free scalar example will already highlight a number of distributional subtleties, and physical consistency conditions will compel us to consider a new space of test functions, making ultraboosted limits sensible and unambiguous, showing symmetries match expectations, and modifying conformal anomalies. Time permitting, I will discuss the resolution to a problem in classical electromagnetism.