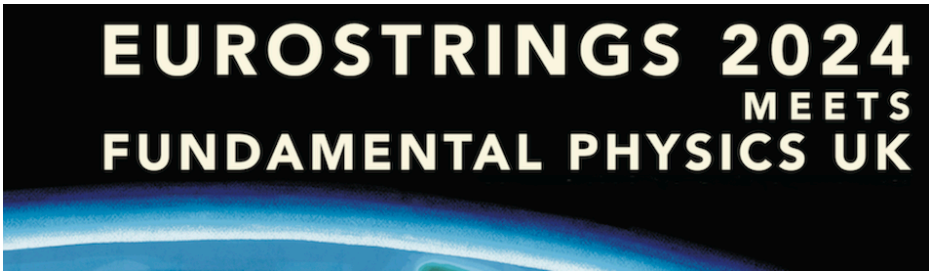

Contribution ID: **99** Type: **Talk in parallel session**

The dynamics of first-order phase transitions in holographic theories

Tuesday 3 September 2024 14:30 (20 minutes)

First-order phase transitions are somewhat neglected by theorists in favor of their second-order counterparts. Yet they contain rich physics, and are of importance in everything from condensed matter physics to (perhaps) early-universe cosmology.

I will discuss the dynamics of first-order transitions at strong coupling, using holographic duality. First, I describe how to construct effective actions which can be used to compute all quasi-equilibrium parameters relevant for bubble nucleation. Second, I discuss computations of the terminal velocity of expanding bubbles. Lastly, I focus on the case where bubble nucleation is *suppressed*, allowing the system to reach the edge of metastability, the spinodal point. Spinodals harbor critical phenomena akin to those of second order transitions, including diverging relaxation times which disrupt adiabatic evolution. I explain how this is realized in a simple holographic setup.

Link to publication (if applicable)

https://arxiv.org/abs/2109.13784, https://arxiv.org/abs/2110.14442

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