



LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

ARNOLD SOMMERFELD
CENTER FOR THEORETICAL PHYSICS



Sommerfeld Theory Colloquium

Prof. J. Cardy

University of Oxford

Entanglement Entropy in Extended Quantum Systems

After a brief introduction to the concept of entanglement in quantum systems, I apply these ideas to many-body systems and show that the von Neumann entropy is an effective way of characterising the entanglement between the degrees of freedom in different regions of space. Close to a quantum phase transition it has universal features which serve as a diagnostic of such phenomena. In the second part I consider the unitary time evolution of such systems following a “quantum quench” in which a parameter in the hamiltonian is suddenly changed, and argue that finite regions should effectively thermalise at late times, after interesting transient effects.

Wednesday, 24th October 07, 11:15 h, Room 348 / 349, Theresienstr. 37 / III