

SYEN 2: Entanglement and Interpretation

Time: Monday 17:10–17:50

Location: Audimax

Invited Talk

SYEN 2.1 Mon 17:10 Audimax

Entanglement and Explanation — ●CHRIS TIMPSON — Faculty of Philosophy, University of Oxford

The last thirty years have seen significant increases in our understanding (and exploitation) of the phenomenon of quantum entanglement. Much of this (quantitative and qualitative) understanding has been driven by developments in quantum information theory. However many traditional conceptual puzzles about how we should understand entanglement remain, particularly when we seek to explain the vio-

lation of Bell Inequalities in correlations between spacelike separated measurement events. Perhaps surprisingly, there remain good reasons why even so straightforward a question as whether such an explanation must involve nonlocality continues to be disputed. I will sketch this landscape of debate out, with a particular focus on the questions 1) of what kind of explanation one might seek, and 2) on whether John Bell's formal statement of his informal Local Causality principle in fact fully captures the informal idea when considering families of theories which may involve fundamental non-separability like entanglement.