

Bulk reconstruction of the black holes in AdS/CFT correspondence (Kanato Goto, UTokyo)

Thursday, 5 April 2018 13:45 (30 minutes)

In the context of AdS/CFT, one of the most important problem is to understand how CFTs describe the bulk interior of the AdS spacetime. Especially, it is not clear whether CFTs can describe the black hole interior. In order to understand it, we construct the bulk local states which are dual to the the states locally excited by a scalar fields in the AdS black holes. For double-sided BHs dual to the thermofield double states and single-sided BHs dual to the CFT boundary states, our construction correctly reproduces the classical spacetime not only outside the horizon but also its inside. We also analyzed the spacetime structure dual to the high energy eigenstates in CFT with our construction. We found that classical black hole spacetime can be reproduced from CFT side unless we probe the deep interior in the bulk. We found the possibility that as we probe the deep interior, the classical notion of spacetime might break down and quantum corrections cannot be neglected. It might be related to the firewall problem which has been actively argued recently.

Summary