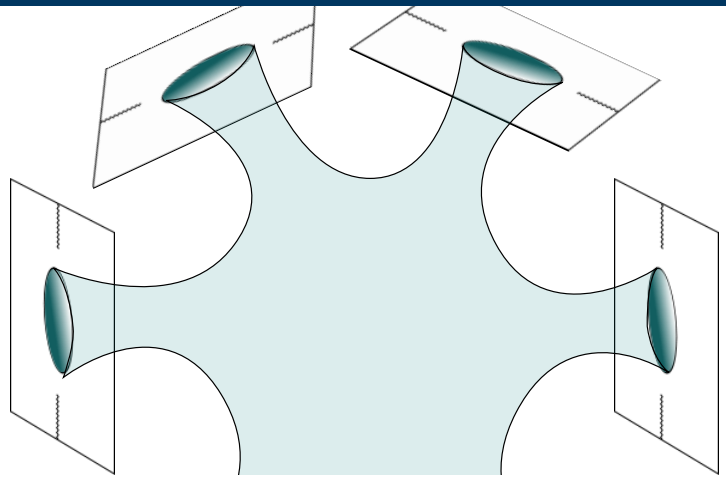


UC SANTA BARBARA
Kavli Institute for
Theoretical Physics

Chalk Talk



Is Information Thrown into a Black Hole Lost Forever? Resolving Hawking's Black Hole Information Paradox

For the past 45 years, theoretical physicists have been wrestling with understanding the fate of information thrown into a black hole. The problem originates with a discovery of Stephen Hawking that, due to quantum mechanics, black holes evaporate into a cloud of radiation essentially devoid of any information they contained. This is the famous black hole information paradox which has been the driving force for decades of research towards a consistent unification of quantum mechanics and gravity. Just this past year, a number of exciting breakthroughs in understanding this paradox seem to have identified the crucial missing ingredient in Hawking's original analysis. These are so-called "spacetime wormholes" which are quantum fluctuations of the spacetime itself, and which have been shown to transcribe the information inside the black hole onto the emitted radiation. A surprising consequence of this development is the suggestion that one can learn about the inside of a black hole by analyzing only its emitted radiation and not have to actually jump into one!

Wednesday, January 22nd

5:30 PM - Courtyard Reception

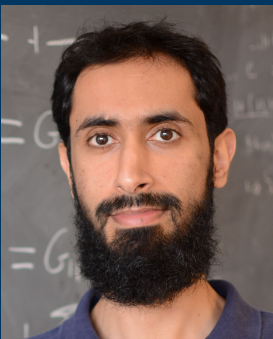
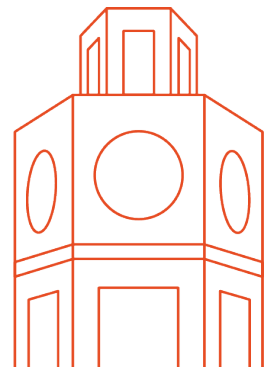
6:15 - 7:15 PM - Presentation and Discussion

Attendance by Reservation only

RSVP by Wednesday, January 15th

Online at <https://www.kitp.ucsb.edu/chalk-talk-rsvp>

By phone 805-893-6350 or email friends@kitp.ucsb.edu



Ahmed Almheiri is a long-term member at the Institute for Advanced Study. He received his B.Sc. in Engineering Physics from the University of Toronto in 2008 and his Ph.D. from the University of California at Santa Barbara in 2014 under the supervision of late KITP Permanent Member Joseph Polchinski. He then held a postdoctoral position at Stanford University until joining IAS in 2017. Almheiri has received the 2014 Lancaster Dissertation Award in Mathematics, Physical Sciences, and Engineering by the UCSB graduate division, and the 2019 "Pride of the Emirates" medal as part of the "Mohammed bin Rashid Government Excellence Award" in the United Arab Emirates.

Lot 10 parking

As you enter campus from Highway 217, turn right onto Mesa Rd, merge into the left lane, and at the stop light turn left into Parking Structure 10. **A parking permit WILL BE PROVIDED to you upon entry.** Please display the permit on your dashboard. KITP is the orange building right next door to the parking structure.