

CONFERENCE: SEEING TWO BLACK HOLES MERGE (WITH GRAVITATIONAL WAVES!)

Wednesday 14 September 2016 19:00 (2 hours)

On 14 September 2015, the advanced LIGO gravitational wave instruments detected the gravitational wave signal emitted as two black holes, about one billion light years away from Earth, made a final few orbits around each other then merged together. This was big news around the world, because scientists have tried to make such observations for more than half a century. Before they merged, the two black holes were about 29 and 36 times as massive as the sun; after the merger was complete, a single black hole about 62 times the sun's mass was left behind. I'll describe what black holes are, how they (and other accelerated masses) produce gravitational waves, and how those waves are detected. I'll also discuss some of the behind-the-scenes details of this discovery, and why we are convinced that this signal, called GW150914, is real. For physics enthusiasts, I'll explain how the main properties of the black holes can be directly determined from the observational data and also why we are convinced that no other explanation is possible.

<http://cds.cern.ch/journal/CERNBulletin/2016/33/Events/2207047?ln=en>

Presenter: ALLEN, Bruce (Max Planck Society/Albert Einstein Institute Hannover)

Session Classification: Public talk: Seeing two black holes merge (with gravitational waves!)