



Contribution ID: 368

Type: **Talk in a parallel session**

Rainbow Black hole from quantum gravitational collapse

Tuesday, 9 July 2024 15:50 (20 minutes)

I will present the quantum evolution of scalar field modes on a quantum spacetime of a collapsing, homogeneous dust ball. Without field backreaction, quantum gravity resolves classical singularities, causing a bounce on the collapse background. Including backreaction, the emergent dressed geometry becomes mode-dependent, resembling a radiation fluid. I will examine the semiclassical dynamics of this mode-dependent background, noting that backreaction accelerates the bounce compared to a dust-only scenario. Additionally, matching interior and exterior regions at the dust boundary reveals a rainbow black hole geometry in the exterior spacetime.

Primary author: Dr TAVAKOLI, Yaser (University of Warsaw)

Co-authors: Dr PARVIZI, Ali (University of Wrocław); Prof. LEWANDOWSKI, Jerzy (University of Warsaw); Dr PAWLOWSKI, Tomasz (University of Wrocław)

Presenter: Dr TAVAKOLI, Yaser (University of Warsaw)

Session Classification: Loop quantum gravity: cosmology and black holes

Track Classification: Quantum Gravity (QG): Loop quantum gravity: cosmology and black holes