Contribution ID: **69** Type: **Oral**

End-state of gravitational collapse of scalar and vector fields: Strong naked singularities

We study here the unhindered gravitational collapse of spatially homogeneous (SH) scalar fields ϕ with a potential $V_s(\phi)$, as well as vector fields $\tilde{A}$ with a potential $V_v(B)$ where $B = g(\tilde{A}, \tilde{A})$ and g is the metric tensor. If the past end-point of a causal geodesic is a singularity, then this singularity is said to be naked. Such a singularity is strong if the volume of an object vanishes when it approaches the singularity. We show that for both scalar and vector fields, classes of potentials exist that give rise to black holes or naked singularities. There are classes of potentials, as well, for which the resultant singularities are strong. There is a non-zero subset of such potentials where the resultant singularities are both naked and strong.
Phys. Rev. D 108, 044049, 2023

Email

koushiki.malda@gmail.com

Affiliation

Ahmedabad University

Author: Dr MOSANI, Karim (Ahmedabad University)

Co-authors: Mr VERMA TRIVEDI, Jay (Ahmedabad University); BHATTACHARYYA, Koushiki (Ahmedabad University); Prof. JOSHI, Pankaj S (Ahmedabad University); Dr BHANJA, Tapobroto (Charotar University of Science and Technology)

Presenter: BHATTACHARYYA, Koushiki (Ahmedabad University)

Session Classification: Classical & Quantum Gravity

Track Classification: Classical & Quantum Gravity