

Theory: Unveiling Novel Scalarized Black Hole Solutions in Modified Theories

Tuesday, September 5, 2023 5:15 PM (15 minutes)

This presentation delves into the study of 'hairy' black holes within the framework of Einstein scalar Maxwell gravity and Einstein scalar Gauss-Bonnet theories, with a focus on revealing new scalarized black hole solutions. We revisit established scalarization phenomena and venture into new solution territories, particularly highlighting the blend of linear and non-linear scalarization in Einstein Scalar Maxwell gravity. Our goal also includes the identification of new scalarized black hole solutions in Gauss-Bonnet theory with a Maxwell field, while outlining their observational significance. Our approach leverages numerical techniques to scrutinize asymptotically flat, spontaneous, and non-linear scalarized black holes in the Einstein-Maxwell-Scalar model, with a keen emphasis on the horizon radii and scalar field intensities. We culminate with an analysis of how scalarization sources shape the horizon area. Our research enhances the comprehension of black hole scalarization and paves the way for continued investigation in this exciting field.

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Session Classification: Parallel Sessions