

Black hole and Early Universe Simulators

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The dynamics of the early universe and black holes are fundamental reflections of the interplay between general relativity and classical/quantum fields. The essential physical processes occur when gravitational and/or field interactions are strong and/or quantum effects are important. These situations are difficult to observe and impossible to experiment with, while the existing theoretical approaches are based on approximations that are in need of experimental verification. I will present some of the recent advances in lab-based tests of the theories through analogue quantum simulation.