

In this talk, which is based on based on arXiv:1404.4472, I will explore ideas in quantizing AdS₃ Einstein gravity. We start with the most general solution to the 3d gravity theory which respects Brown-Henneaux boundary conditions. These solutions are specified by two holomorphic functions and satisfy simple superposition rule. These geometries generically have a bifurcate Killing horizon (with a not-simply connected or noncompact bifurcation curve) and are hence not black holes in the usual sense. Nonetheless, there are superpositions of these geometries which have event horizon and become BTZ black holes. We propose to view these geometries as “semiclassical fuzzball microstates” of BTZ black holes appearing as superposition of these geometries. In the end I will discuss some ideas for carrying out full quantization of these geometries, and hence AdS₃ gravity.