

Black hole formation for Vlasov matter from a complete regular past

Hakan Andreasson, AAAS

An interesting phenomena in general relativity is the formation of black holes from regular initial data. It is important to ask if such data can give rise to a solution which is geodesically complete to the past, containing no white holes. In this work data of this kind is constructed for the Einstein-Vlasov system. This result relies in part on previous works together with Kunze and Rein. To guarantee that a black hole forms in the future direction it is required that the quantity $2M/R$ is close to one. The new improvement of the present result is that the initial data for which global existence is shown to hold to the past admits $2M/R$ to be close to one in contrast to the situation in our previous work.