

A self-similar solution of the Einstein-Vlasov system

Alan Rendall, Max Planck Institute für Gravitationsphysik, Albert-Einstein-Institut

There has been a lot of work done, both analytical and numerical, to investigate the formation of singularities in solutions of the Einstein-Vlasov system. Recently Juan Velazquez and I proved the existence of a self-similar solution having a bearing on this question. The core of the existence proof is a shooting argument for a four-dimensional system of ODE and this will be the main subject of the talk. In addition I will explain the motivation for studying this problem and sketch some possible directions of generalization which lead to PDE problems.