Title: The shadow of black holes

Abstract

The visual appearance of black holes has been studied by many groups with the help of ray tracing, which has been popularised in the movie ``Interstellar''. In this talk I'll present a number of analytical results that complement these (very valuable) numerical investigations. In particular, I'll present an analytical formula for the boundary curve of the shadow of a black hole with mass, spin, charge, NUT parameter, acceleration and cosmological constant. I'll discuss which kind of observations can be used to discriminate between different black holes and between black holes and ``black hole impostors'' such as ultracompact stars and wormholes. I'll also address the question of how the shadow is influenced by a plasma. - This talk is partly based on joint papers with A. Grenzebach, C. Laemmerzahl, O. Tsupko and G. Bisnovatyi-Kogan.