Abstract Submitted
for the APR16 Meeting of
The American Physical Society

A Fanfare of Trumpet Black Holes JOLYON BLOOMFIELD, Massachusetts Inst of Tech-MIT — The trumpet slicing of a black hole spacetime has a number of interesting properties: the slicing is horizon penetrating but never enters an "alternative universe" and the central singularity is automatically excised without the need for any boundary conditions. These properties have been exploited in moving-puncture numerical relativity codes. Analytic solutions for trumpet coordinates in the Schwarzschild geometry are well known. We present the analytic solution for the extremal trumpet slicing of the Reissner-Nordstrom geometry, and use an unexpected structure present in this solution to derive new insights into the Schwarzschild trumpet coordinates. A new method for obtaining the limiting surface of a trumpet slicing is exploited to obtain the limiting surface for the Kerr geometry order by order in a^2. These results are then combined to construct the leading-order extremal trumpet solution for the Kerr geometry.

Jolyon Bloomfield
Massachusetts Inst of Tech-MIT

Date submitted: 08 Jan 2016 Electronic form version 1.4