

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Effects of Inner Alfvén Surface Location on Black Hole Magnetospheres in the Force-Free Limit KEVIN THOELECKE, Montana State University, MASAAKI TAKAHASHI, Aichi University of Education, SACHIKO TSURUTA, Montana State University — An energy extracting black hole magnetosphere can be defined by the location of its inner Alfvén surface, which determines the rate of energy extraction along a given magnetic field line that passes through it. Despite its defining role, it is still largely uncertain how the location and nature of the inner Alfvén surface might correspond to changes in magnetosphere structure. In this talk I will present simple force-free black hole magnetospheres obtained numerically that encompass a wide range of Alfvén surface locations. In particular the differences between magnetospheres with an Alfvén surface near the horizon and an Alfvén surface near the boundary of the ergoregion will be discussed, along with what those differences might imply about energy extracting black hole magnetospheres in general.

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Date submitted: 28 Sep 2016

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