Stability and Instability of Scalar Fields on Kerr Spacetimes

Yakov Shlapentokh-Rothman*[1]

[1]Department of Mathematics - Princeton University – Department of Mathematics Fine Hall, Washington Road Princeton NJ 08544-1000 USA, United States

Abstract

I will discuss some stability and instability results for wave and Klein-Gordon equations on sub-extremal Kerr exterior backgrounds. More specifically, for the wave equation we will see that general finite energy solutions have a uniformly bounded energy and satisfy an integrated local energy decay estimate. In contrast, for the Klein-Gordon equation we will see that there exist finite energy solutions which grow exponentially. We will also discuss the implications of these results for black hole stability. Some of this work is joint with Mihalis Dafermos and Igor Rodnianski.

*Speaker