

NIKY KAMRAN, McGill University  
*Decay of scalar waves in Kerr geometry*

We consider the Cauchy problem for the scalar wave equation in the Kerr geometry for a rotating black hole in equilibrium, and prove that the solutions corresponding to initial data compactly supported outside the event horizon end to zero in  $L_{loc}^\infty$  as  $t \rightarrow \infty$  in the Boyer–Lindquist slicing. The analysis is more difficult than in the case of the Dirac equation, owing to the presence of an ergosphere, that is a region of space-time outside the event horizon in which the Killing vector corresponding to time translations becomes space-like. This is joint work with Felix Finster, Joel Smoller and Shing-Tung Yau.