



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

UNC PDE Mini-school
“Geometric singular analysis and black holes”

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10:30am –11:30am
PH 332

Wave propagation on rotating cosmic string spacetimes

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Abstract. A rotating cosmic string spacetime has a singularity along a timelike curve corresponding to a one-dimensional source of angular momentum. Such spacetimes are not globally hyperbolic: they admit closed timelike curves near the so-called “string”. This presents challenges to studying the existence of solutions to the wave equation via conventional energy methods. In this work, we show that forward solutions to the wave equation (in an appropriate microlocal sense) do exist. Our techniques involve proving a statement on propagation of singularities and using the resulting estimates to show existence of solutions. This is joint work with Jared Wunsch.