



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

M. E. Taylor Analysis and PDE Seminar

November 1, 2023
3:30 - 4:30 p.m.
Phillips Hall 385

**Transport of nonlinear oscillations along rays that graze a convex
obstacle to any order**

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Abstract. When a wave interacts with a convex obstacle, it creates reflected waves, as well as waves in the geometric shadow of the obstacle. This phenomenon is called wave diffraction. To describe the propagation of oscillations in wave diffraction, we construct highly oscillatory asymptotic solutions to certain semilinear wave equations, allowing arbitrary order of grazing. As a corollary, we found that no oscillation can be observed in the geometric shadow in H^1 norms. This talk is based on joint work with Mark Williams.