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David M. Ambrose* (dma68@drexel.edu), Department of Mathematics, Drexel University, Philadelphia, PA 19104. *Nonexistence of small time-periodic solutions for dispersive equations.*

In joint work with J. Douglas Wright, we have developed a method to prove nonexistence of nontrivial small doubly periodic (i.e., both spatially and temporally periodic) solutions for nonlinear evolution equations. This method formulates the question of existence of time-periodic solutions as a fixed point problem, and we show in certain circumstances that the only fixed point of the relevant operator is the trivial solution. The operator in question is the composition of a linear operator and the Duhamel integral for the evolution. We use small divisor estimates to control the linear part. We show applications to the KdV equation and nonlinear Schrodinger equations, proving that for almost every temporal period, arbitrarily small doubly periodic solutions cannot exist. (Received January 06, 2017)