



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

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**M. E. Taylor Analysis and PDE Seminar**

Wednesday, April 10<sup>th</sup>  
3:30 - 4:30 p.m.  
Phillips Hall 385

**Gravity water waves with constant vorticity at low regularity and  
balanced energy estimates**

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**Abstract.** In this talk I will talk about the Cauchy problem of two-dimensional gravity water waves with constant vorticity. The water waves system is a non-linear dispersive system that characterizes the evolution of free boundary fluid flows. I will describe the balanced energy estimates by Ai-Ifrim-Tataru and show that the water waves system is locally well-posed in  $H^{\frac{3}{4}} \times H^{\frac{5}{4}}$ . This is a low regularity well-posedness result that effectively lowers  $\frac{1}{4}$  Sobolev regularity compared to the previous result.