New estimates for 1d dispersive PDE

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Abstract: The water wave problem in 2d reduces to a nonlinear 1d dispersive PDE. In this talk, I will present joint work with Sijue Wu developing a class of new $L^\infty$ bounds for solutions to 1d linear dispersive PDE, motivated by the water wave problem. The main ingredients in the proofs are the method of invariant vector fields and techniques from oscillatory integrals.