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*On the Cauchy problem for the Airy type equations*

Dispersive equations historically emerged as models in the mathematical study of water waves starting with Laplace and Airy in the early 19th century. One of such equations is the third order Airy equation  $\partial_t u + \partial_{xxx} u = 0$  in one space dimension. A key feature of the Airy equation is dispersion, which describes the propagation of localized waves to infinity. On the other hand, this dispersive effect is local and weakens at spatial infinity, where other effects may come into play. In this talk I will discuss a sharp condition on the coefficients of the equation for the wellposedness (existence, uniqueness, etc) of the Cauchy problem associated to Airy type equations  $\partial_t u + \sum_{j=0}^3 a_j(x) \partial_x^j u = 0$  with  $C \leq a_3(x) \leq \frac{1}{C}$ . The study of such Airy type equations is useful for non-linear problems that arise in water waves.