

CMM PDE Seminar

Speaker: Didier Pilod (University of Bergen, Norway)

Title: "Finite point blowup for the critical generalized Korteweg-de Vries equation"

Abstract: In the last twenty years, there have been significant advances in the study of the blow-up phenomenon for the critical generalized Korteweg-de Vries (gKdV) equation, including the determination of sufficient conditions for blowup, the stability of blowup in a refined topology and the classification of minimal mass blowup. Exotic blow-up solutions with a continuum of blow-up rates and multi-point blow-up solutions were also constructed. However, all these results, as well as numerical simulations, involve the bubbling of a solitary wave going at infinity at the blow-up time, which means that the blow-up dynamics and the residue are eventually uncoupled. Even at the formal level, there was no indication whether blowup at a finite point could occur for this equation.

After reviewing the theory of blow-up for the critical gKdV equation in the first part of the talk, we will answer this question by constructing solutions that blow up in finite time under the form of a single-bubble concentrating the ground state at a finite point with an unforeseen blow-up rate.

Finding a blow-up rate intermediate between the self-similar rate and other rates previously known also reopens the question of which blow-up rates are actually possible for this equation.

This talk is based on a joint work with Yvan Martel (École Polytechnique/France).

Modalidad: presencial en la sala de seminarios del DIM piso 5 o bien online vía zoom:

<https://uchile.zoom.us/j/81800846925?pwd=T0krYUE0YkhnVnFPN2prUGNpUU9kZz09>

Meeting ID: 818 0084 6925, Passcode: 939730

April 5, 2022 at 12 p.m.

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