



PIMS / AMI Seminar

Thursday, April 18, 2019

3:00 p.m.

CAB 657

“Long time behavior of 2D water waves with point vortices”

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Abstract

In this talk, we study the motion of the two dimensional inviscid incompressible, infinite depth water waves with point vortices in the fluid. We show that Taylor sign condition can fail if the point vortices are sufficiently close to the free boundary, so the water waves could be subject to the Taylor instability. Assuming the Taylor sign condition, we prove that the water wave system is locally well-posed in Sobolev spaces. Moreover, we show that if the water waves is symmetric with a certain symmetric vortex pair traveling downward initially, then the free interface remains smooth for a long time. If the initial data is localized and small, then the solution is global and has modified scattering.