

PHYS3710 Short experimental projects I
Department of Physics
The Chinese University of Hong Kong, Hong Kong
Topic: Water wave and Soliton

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Topics you should know first:

Wave equation

Objectives:

1. Understand the equipment setup (water wave tank, resistance-voltage converter and PASCO 850 Universal Interface) and software (PASCO capstone).
2. To predict the number of soliton(s) and wave profile to be generated.
3. To generate and measure different rank-ordered soliton.
4. [Optional] To generate and measure overtaking of solitons.

Check-list for the project:

1. Get familiar with equipment setup and learn the techniques of wave profile measurements.
2. Read references 1. Understand the relevant wave equations.
3. Predict the number of soliton(s) to be generated under laboratory conditions.
4. Generate solitons under laboratory conditions.
5. Measure the wave profile and compare the number of soliton(s) generated with theory.

References:

1. Alessandro Bettini, Tullio A. Minelli, and Donatella Pascoli
“Solitons in undergraduate laboratory”

Reference folder is available.