MEK4600/9600: Xray measurements of multiphase flow i pipes, Ex 3

March 12, 2018

In this project Xray measurements will be used to study multiphase flow. For the introductory part, explain the basic principle of Xray and how/why the different phases are detected. Another important part will be to analyse the energy spectra. Explain how this can be done in practise.

The topics below will be divided between the groups.

1 Case 1

- Linear shallow water waves. $U_{sl} = 0.1, U_{sg} = 1.5$
- Find λ, k, h
- Compare η with theory and show the energy spectra.
- 3D surface structure?
- \bullet Damping of waves from D1 (detector) to D2, check c and a

2 Case 2

- Irregular wind driven waves. $U_{sl} = 0.1, U_{sg} = 2.5$
- Find λ, k, h
- 3D surface structure?
- \bullet Damping of waves from D1 (detector) to D2, check c and a

3 Case 3

- Fully turbulent regime, no gravity waves. $U_{sl}=0.02,\,U_{sg}=\max$
- Try to find η and analyse the energy spectra
- Measure the amount of air.
- 3D surface structure?