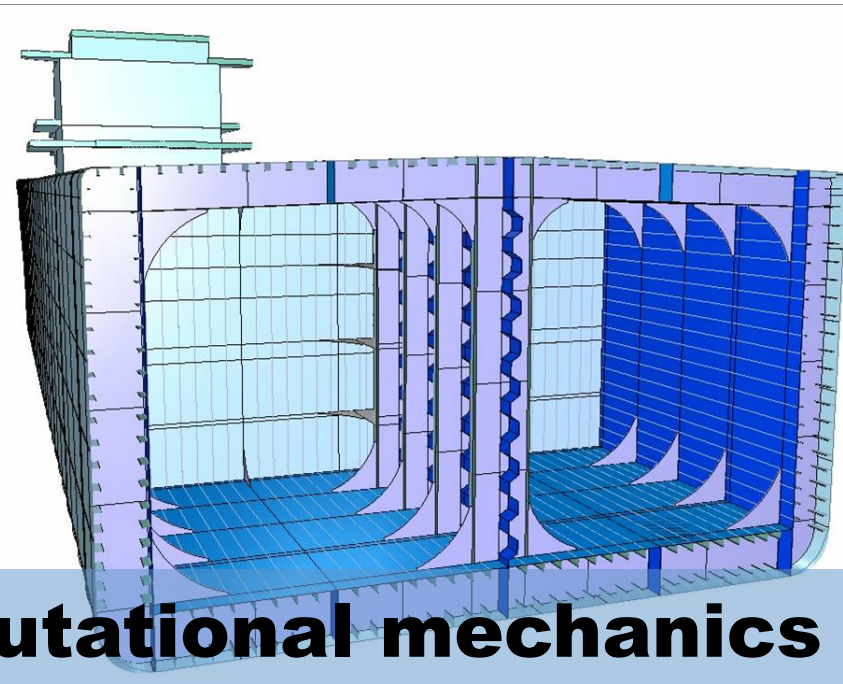# Mechanics at UiO

Section leader: Atle Jensen

Mechanics Section, Department of Mathematics, University of Oslo

Vision:
By mathematics, physics, numerics, experiments: model processes and phenomenas

HYDRODYNAMICS L A B O R A T O R Y

UNIVERSITY OF OSLO
FACULTY OF MATHEMATICS AND NATURAL SCIENCES

Theoretical and computational mechanics

- Mechanics (7 faculty + 5 adjunct and 16 PhD, 3 industrial PhD, 4 PD)
- New faculty position in 2017
- Topics;
  - Ocean waves, currents and tsunamis
  - Fluid mechanics laboratory
  - Multiphase flow and turbulence
  - Marine hydrodynamics and coastal engineering
  - Biomechanics
  - Microfluidics/solar power
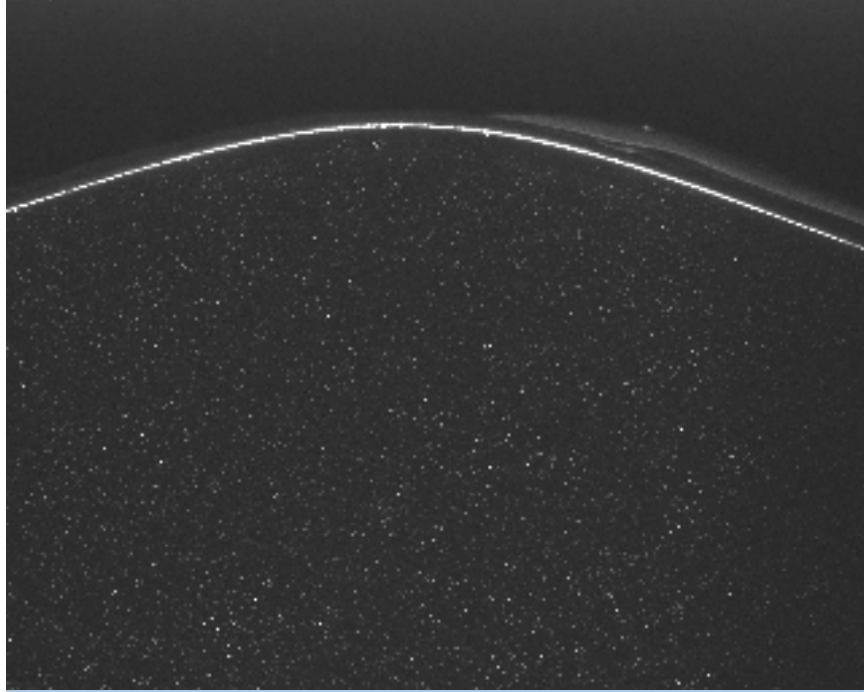
- Fluid mechanics laboratory; NEW 3D lab 2017→
  - Internal waves
  - Surface waves; wave impact, tsunamis and rogue waves
  - Multiphase flow and turbulence
  - Microfluidics
- Advanced measurement techniques
  - Particle Image Velocimetry; high spatial and temporal resolution.
  - New: Xray tomography

Research projects

- Industrial partners
  - DNV GL, Total, Statoil, GE oil and gas, Aker Solutions and FMC technologies, Trilobite (Sintef, FFI, IFE and Simula research laboratory)

- External funding

  - Renewable energy; wind/wave power

  - Offshore industry

  - Norwegian Research Council

Projects

- Particles in turbulent flow (spray from waves)
- Mechanochemical interplay in intraluminal vesicle formation
- Xray PTV
- Waves in oil and ice
- Turbulence/slugs in two-phase pipe flow
- Flow in micro channels; complex geometries – biomed flow/separation
- Adaptive DNS applied on two-phase flow
- Waves and structures
- Radar measurements of nonlinear ocean waves
- Interdisciplinary projects
  - EarthFlows; physics, geology and mathematics
  - 4Dspace; physics, informatics and mathematics

Ongoing Projects

- Particles in turbulent flow (spray from waves)
- Mechanochemical interplay in intraluminal vesicle formation
- Xray PTV
- Waves in oil and ice
- Turbulence/slugs in two-phase pipe flow
- Flow in micro channels; complex geometries – biomed flow/separation
- Adaptive DNS applied on two-phase flow
- Waves and structures
- Disp. rel. in radar measurements
- Interdisciplinary projects
    - -EarthFlows; physics, geology and math
    - -4Dspace; phycsics, informatics and math