



46th Scandinavian Symposium on Physical Acoustics

Geilo, 29 January to 1 February, 2023

Program for Sunday, 29 January

19:00 Dinner

21:00 Opening of the symposium

21:15 Annual meeting of the Acoustics group of the Norwegian Physical Society

Program for Monday, 30 January

Monday morning session

08:30 1st presentation session

- *Non-Newtonian and non-Hookean phenomena in acoustics*
Sverre Holm (UiO)
- *Light-weight tomographic wall thickness mapping of pipes*
Audun Oppedal Pedersen (UiB), Peter B. Nagy (U. of Cincinnati), Francesco Simonetti (U. of Cincinnati), Geir Instanes (ClampOn)
- *Speed of sound in gases at high pressure*
Kjell-Eivind Frøysa (HVL)

09:30 Coffee and discussion break

09:50 2nd presentation session

- *Dual hybrid ultrasound transducer*
Duy Hoang Le (USN), Lars Hoff (USN), Tung Manh (USN)
- *Equivalent circuit model for a dual hybrid frequency transducer*
Mansoor Khan (USN)
- *High temperature transducers for applications in the oil and gas industry*
Josh Hoi Yi Siu (USN)

10:50 Break for networking, skiing, and lunch

Monday afternoon session

15:20 3rd presentation session

- *Pipe wall thickness estimation by frequency-wavenumber analysis of circumferential guided waves*
Magnus Wangensteen (NTNU), Tonni Franke Johansen (SINTEF/NTNU), Ali Fatemi (Sensorlink), Erlend Magnus Viggen (NTNU)
- *Estimating incident angle of ultrasonic beam in pipes*
Sander Thygesen (Equanostic/UiO)



- **From 3D to 1D – effective numerical modelling of pulse-echo measurements in pipes**
Anja Diez (SINTEF), Tonni Franke Johansen (SINTEF/NTNU), Erlend Magnus Viggen (NTNU)
- **Ultrasonic pipe-robot for inspection of water and waste pipes**
Tore Sirevaag (Equanostic)

16:40 Coffee and discussion break

17:10 4th presentation session

- **Monitoring salmon with broad band echo sounders – investigate acoustic parameters as indicators for welfare**
Tonje Nesse Forland (IMR), Maren Forstrønen Rong (UiB), Frode Oppedal (IMR), Rune Øyerhamn (NORCE), Geir Pedersen (IMR)
- **Numerical and experimental investigations on pulse length effect on TS measurements of bluefin tuna**
V́ctor Espinosa (UPV), Anderson Ladino-Velasquez (UPV), Isabel Pérez Arjona (UPV), Andrés Morillo-Faro (UPV), Vicent Puig-Pons (UPV)
- **Acoustic simulation of the target strength of the Bluefin tuna swimbladder using 3D Computed Tomography**
Isabel Pérez Arjona (UPV), Anderson Ladino-Velasquez (UPV), Vicent Puig-Pons (UPV), V́ctor Espinosa (UPV)
- **Behaviour dependent broadband backscattering by physostomous fish (*Clupea harengus* L.)**
Geir Pedersen (IMR), Nils Olav Handegard (IMR), Espen Johnsen (IMR)
- **Resolving and characterizing nearby targets by means of broadband acoustics**
Babak Khodabandeloo (IMR), Geir Pedersen (IMR), Tonje Nesse Forland (IMR), Rolf J. Korneliussen (IMR), Nils Olav Handegard (IMR)

18:50 Academic program finished

19:00 Dinner

Program for Tuesday, 31 January

Tuesday morning session

08:30 5th presentation session

- **Automated matching and pre-classification of sonar tracks on known navigational paths**
Dan Henrik Stender (FFI), Karl Thomas Hjelmervik (USN)
- **Effect of oceanographic variability on sonar performance**
Trond Jenserud (FFI)
- **Modelled sonar and target depth distributions for active sonar operations in realistic environments**
Kristoffer Engedal Andreassen (FFI), Karl Thomas Hjelmervik (USN)

09:30 Coffee and discussion break



09:50 Special session for new acoustics students

10:20 6th presentation session

- *Why leaky flexural plate waves misbehave at low frequencies*
Erlend Magnus Viggen (NTNU), Håvard Kjellmo Arnestad (UiO)
- *Contributions from the backward- and forward-wave bands to ultrasonic beam transmission for a fluid-embedded steel plate*
Mathias M. Sæther (UiB), Per Lunde (UiB)

11:00 Break for networking, skiing, and lunch

Tuesday afternoon session

15:20 7th presentation session

- *Acoustic and photoacoustic hybrid imaging of salmon skin*
Frank Melandsø (UiT), Abhishek Ranjan (UiT), Azeem Ahmad (UiT), Jaya Swain (UiT), Balpreet Singh Ahluwalia (UiT)
- *3D high-frame-rate imaging of mechanical waves in the heart*
Danial (Mohammad) Mohajery (NTNU)
- *Extended depth of focus acoustic imaging*
Anowarul Habib (UiT), Kaushik Shukla (Indian Institute of Tech. Dhanbad), Azeem Ahmad (UiT), Komal Agarwal (UiT), and Frank Melandsø (UiT)
- *Bounding the beampattern of acoustic arrays using interval arithmetic*
Håvard Kjellmo Arnestad (UiO), Gabor Gereb (UiO), Tor Inge Birkenes Lønmo (KM), Jan Egil Kirkebø (InPhase), Andreas Austeng (UiO), Sven Peter Näsholm (UiO)
- *Interval computations in acoustics*
Gabor Gereb (UiO), Håvard Kjellmo Arnestad (UiO)

17:00 Coffee and discussion break

17:30 8th presentation session

- *Challenges in using ultrasound backscatter for counting bubbles*
Shivanandan Indimath (NTNU), Svein-Erik Måsøy (NTNU), Bjarne Rosvoll Bøklepp (Equinor)
- *Exploring role of material science for advancements in acoustic microscopy*
Komal Agarwal (UiT), Anowarul Habib (UiT), Frank Melandsø (UiT)
- *Experiments on time reversal focusing in concrete*
Tonni Franke Johansen (NTNU/SINTEF), Philip Erik Buschmann (SINTEF)
- *Using the spectrum of the spectrum to extract direct and multipath arrivals from a frequency domain simulation. Comparison with a cepstrum method.*
Eivind Nag Mosland (UiB), Per Lunde (UiB), Jan Kocbach (NORCE)

18:50 Academic program finished

19:00 Dinner



Program for Wednesday, 1 February

Wednesday morning session

09:00 9th presentation session

- *Hydrophone recordings in the Arctic Ocean from a hybrid-powered ice breaker*
Espen Storheim (NERSC), Hanne Sagen (NERSC)
- *Simulation of under-ice sound propagation with SPECFEM2D*
Nicholas Chotiros (U. of Texas at Austin)
- *Simple illustrations of multiple underwater sound scattering among islands*
Sven Ivansson
- *Estimation and removal of acoustic broadband noise*
Rolf J. Korneliussen (IMR), Yngve Heggelund (NORCE), Inge K. Eliassen (NORCE)

10:20 Closing of the symposium



Instructions for regular presenters

- The time between presentations is 20 minutes.
- Please limit your talk to 15 minutes, allowing some time for questions and change of presenter.
- We prefer that you run your presentations from our dedicated presentation computer. Please upload your presentation to this computer before the start of your session and test that it works correctly. (Pay special attention to videos, equations, and special fonts and symbols.) The presentation computer can display PowerPoint, PDF, and LibreOffice files.
- If you need to use your own computer, please test it before the start of your session to ensure that it is compatible with the projector, and have everything ready before your presentation.

Instructions for student presenters

The student presentation session gives new students an opportunity to present themselves to the community, even without sufficient material for a full talk.

- You are given 3 minutes each to present yourself and your project
- Please prepare a presentation with one or two slides, containing:
 - Your name
 - The title of your project
 - The name(s) of your supervisor(s) and your institution and group
 - Short description of your project: Background, motivation, goals, etc.
 - Results, if you have any yet

Common affiliation abbreviations

- FFI: Norwegian Defence Research Establishment
- HVL: Western Norway University of Applied Sciences
- IMR: Institute of Marine Research
- KM: Kongsberg Maritime
- NERSC: Nansen Environmental and Remote Sensing Center
- NTNU: Norwegian University of Science and Technology
- UiB: University of Bergen
- UiO: University of Oslo
- UiT: University of Tromsø
- UPV: Technical University of Valencia
- USN: University of South-Eastern Norway