AGENDA – ROSE meeting 24th-27th April 2017

Location: P1 in PTS1, S.P. Andersens veg 15, Trondheim.

Monday 24th April

09:00 Coffee and registration
09:30 Welcome

Session 1: Rock physics

09:40 Do wave velocities really depend on stress?, *Erling Fjær, SINTEF/NTNU*
10:00 Ultrasonic properties of creepy shales – for increased recovery and well abandonment, *Rune M Holt, NTNU*
10:20 Laboratory measured stress dependence at seismic and ultrasonic frequencies, *Dawid Szewczyk, NTNU*
10:40 From cradle to grave - The rock physics "life story" of a clastic sediment, *Per Avseth, NTNU/G&G Resources*
11:00 The impact of partial CO_2 saturation on seismic velocities of sandstones*, Nicolaine Agofack, NTNU*
11:15 The relation between static and dynamic stiffness of rocks, *Serhii Lozovyi, NTNU*
11:30 How can we approach the kHz range in laboratory rock physics?, *Stian Rørheim NTNU*
11:40 Geophysical methodologies in glacial environments, *Stefano Picotti,OGS*

12:00 **LUNCH**

Session 2: Modeling, Processing and Anisotropy

13:00 Shear waves in acoustic anisotropic media, *Jin Song, NTNU*
13:20 Shear wave singularities in tilted orthorhombic media*, Yuriy Ivanov, NTNU*
13:40 Preserved traveltime smoothing in orthorhombic media, *Shibo Xu, NTNU*
14:00 Seismic waves in a solid-fluid system, *Alexey Stovas, NTNU*
14:20 Geometric theory of seismic imaging, *Anton Duchkov, Novosibirsk University*

14:40 **Coffee break**

15:10 Recursive-iterative zero-phase filtering via singular spectral analysis, *Bjørn Ursin, NTNU*

Session 3: Seismic acquisition and broadband seismic

15:30 TOPSEIS*, Per Eivind Dhelie, Lundin*
16:00 Modeling ghost cavitation signals generated by air gun arrays, *Babak Khodabandeloo, NTNU*
16:20 Streamer depth versus vessel and seismic interference noise*, Toan Dao, NTNU*

19:00 Dinner, at ROCKHEIM

Tuesday 25th April

Session 3: Seismic acquisition and broadband seismic (continued)

08:30 Seismic sources – smaller, quieter and cheaper – and better? *Per Eivind Dhelie, Lundin*
09:00 Measuring the transmission coefficient of the air-water surface, *Daniel Wehner, NTNU*

Session 4 Time lapse and reservoir characterization

09:20 Early detection of gas leakage using seismic data, *Martin Landrø, NTNU*
09:50 Depth dependent dilation factor, *Kenneth Duffaut, NTNU*

10:10 **Coffee break**

10:40 4D prestack timeshifts, *Thomas Røste, Statoil*
11:10 Effect on water salinity on time lapse seismic pressure-fluid discrimination*, Filipe Borges, NTNU/Petrobras*
11:30 Recent 4D results from Valhall LoFS, *Vegard Dahl-Eriksen, AkerBP*

11:50 **LUNCH**

Session 5: Imaging and inversion

12:40 Acurracy of Finite-difference modeling, *Børge Arntsen, NTNU*
13:00 Fast in-memory elastic full-waveform inversion using consumer-grade GPUs, *Tore Sivertsen Bergslid, NTNU*
13:20 Low and high frequencies – FWI-inversion, *Lasse Amundsen, NTNU/Statoil*
13:40 Accelerating 3D Elastic Wave Equations on Knights Landing based Intel Xeon Phi processors, *Mohammed Sourouri and Espen Birger Raknes*
14:00 Parameter resolution and cross-talk for Elastic Full Wavefrom Inversion, *Vegard Stenhjem Hagen, NTNU*

14:20 **Coffee break**

14:50 The Boundary Element Method for modeling the acoustic response of a cylinder in a horizontally stratified medium, *Ivan Karpov, NTNU*
15:10 Up-down wavefield retrieval in boreholes using single-component data, *Yu Liu, NTNU*
15:30 Inversion of optical waveforms in a distributed acoustic sensing system, *James Rickett, Schlumberger*
15:50 Sensitivity and cross-talk for Q-estimation, *Marco D'Oleire, NTNU*

16:10 Summary and adjourn

26th -27th April: Course on Seismic Attenuation by *Jose Carcione*, *Course ends afternoon 27th April*

Two-day course on Seismic Attenuation

Lecturer: Jose Carcione: 26th-27th April 2017, aud. P1, S.P. Andersens veg 15A

Note that the course ends at 16:30, Thursday 27th April

Seismic attenuation

Professor: José M. Carcione (OGS, Trieste, Italy)
email: jcarcione@libero.it

Course objectives

This course presents the fundamentals of seismic attenuation in the context of hydrocarbon exploration, where anisotropy and poroelasticity play an essential role. The emphasis is on geophysical applications for oil exploration, but researchers in the fields of earthquake seismology and material science may also find the material useful. Moreover, the course illustrates the use of seismic modeling, including applications mainly in the field of geophysical prospecting.

Course content

Concepts	***Applications***
Seismic attenuation and Q. Mechanical viscoelastics models. Hooke's law and wave equation. Poroelasticity. Seismic anisotropy. Seismic rock physics. Mesoscopic models Permeability from Q Computation of synthetic seismograms. Seismic and EM Q. Analogies.	Fluid flow in porous media. Unconventional resources. Oil and gas shales. A review of upscaling methods. Effect of attenuation on AVO Q and velocity anisotropy in fractured media. Recent advances to model waves in reservoir and source rocks Detection and quantification of gas hydrates. Borehole waves. Injection of fluids and seismic monitoring. Time-lapse cases. Geophone-soil coupling models.

Duration: 2 days
Language: English.
Basic text for the concepts:
http://store.elsevier.com/Wave-Fields-in-Real-Media/José-M_-Carcione/isbn-9780080999999/
Relevant articles of the lecturer:
http://www.lucabaradello.it/carcione/pubs.html

Time plan (day 1, Wednesday):

08:30	**Lecture**	**13:15**	**Lecture**
10:15	**Coffee**	**15:00**	**Coffee**
10:45	**Lecture**	**15:30**	**Lecture**
12:15	**Lunch**	**16:30**	**End**

Time plan (day 2, Thursday):

08:30	**Lecture**	**13:15**	**Lecture**
10:15	**Coffee**	**15:00**	**Coffee**
10:45	**Lecture**	**15:30**	**Lecture**
12:15	**Lunch**	**16:30**	**End**