



EAGE

EUROPEAN
ASSOCIATION OF
GEOSCIENTISTS &
ENGINEERS



Seventh EAGE Rock Physics Workshop

**BEYOND PROCESSING: UNLEASHING AI AND ROCK PHYSICS
FOR THE NEXT-GENERATION SEISMIC IMAGING**

10-12 NOVEMBER 2025 • CAPE TOWN, SOUTH AFRICA

• Programme

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PLATINUM SPONSOR



TECHNICAL COMMITTEE

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Anubrat Mukherjee	SLB
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WORKSHOP OVERVIEW

Fueled by the recent surge in artificial intelligence (AI) capabilities and the development of advanced depth imaging workflows, seismic imaging is undergoing a transformative revolution. The 7th Rock Physics Workshop delves into this paradigm shift, exploring how rock physics principles are now playing a critical role in unlocking the full potential of these technologies for enhanced reservoir characterization. The workshop will showcase how cutting-edge advancements, such as Full Waveform Inversion (FWI), Extended FWI (EFWI), and deep learning, when synergistically integrated with rock physics knowledge, are ushering in a new era of seismic imaging.

This era promises unparalleled detail and accuracy in characterizing the subsurface. Moving beyond theoretical discourse, the workshop will bridge the gap between theory and practice. It will explore how recent advancements in rock physics research are being translated into practical workflows and tools specifically designed for seismic imaging and reservoir characterization. Real-world case studies will be presented, equipping participants with the knowledge and expertise to leverage these advancements for optimized exploration and development strategies.

WORKSHOP TOPICS

Data Conditioning & Feasibility

- Seismic & Well Data Conditioning for Rock physics and QI
- Rock physics & AVO feasibility
- Seismic Petrophysics

Applied Rock Physics

- Seismic Processing and Rock Physics
 - FWI
 - Advanced seismic imaging
 - Pore pressure prediction
 - Seismic velocities update Seismic Geomechanics
- 4D feasibility study and reservoir monitoring
- Quantitative seismic interpretation
 - Joint AVA inversion
 - Azimuthal inversion
 - Inverse Rock Physics Uncertainty quantification
- Multiphysics Integration including Non-seismic
- Unconventional Rock Physics
- Carbonate Rock Physics

Laboratory Rock physics

- Digital Rock Physics
- Experimental Rock physics
 - Laboratory Rock Physics tests for Co2 effects on the carbonates elastics properties
 - Effects of dispersion, anisotropy and scale on velocities.

Theoretical Rock Physics

- Rock physics models for shales
- Rock physics models for crystalline rocks
- Fluid substitution theories and limitations
- Seismic attenuation

Digital Transformation

- Rock physics data libraries and management
- Rock physics AI/ML analysis

Energy Transition and CCUS / Renewable Energy

- Rock physics for environmental monitoring
- Energy storage and Hydrogen
- Rock physics for Measurement, Monitoring and Verification (MMV) plans.
- Rock physics for ensuring Conformance and Containment.
- Geothermal



FIELD TRIP

Field Trip Leader



Professor Emese M. Bordy

PhD in Geology
Rhodes

My research focuses on the quantification of climatic and tectonic signatures in sedimentary rocks, with a strong emphasis on biogeographic and palaeo-ecological processes in the deep past. Most of my research is dedicated to decoding the world-famous rock record of southern Africa. I have two decades of geoscience teaching practice and am passionate about mentoring the next generation of Earth scientists. I enjoy my editorial work as well as scientific writing and illustrating.

Field Trip Overview

This field trip will focus on the geological formations of the Cape Peninsula, primarily in the Hout Bay area, where delegates will explore both modern and ancient geological processes. The field trip emphasizes the principle of uniformitarianism, showcasing how modern landscapes and sedimentary features can help us understand ancient environments. Delegates can observe rock outcrops, river dynamics, sedimentary processes, and wave actions to make connections between past and present geological events. Tasks will be facilitated and totally facultative.

Field Trip Preparation Guide

To ensure a productive and comfortable field experience, please come prepared for variable Cape weather conditions (rain, wind, sun in one day).

Essential Items

- Layered clothing (weather-resistant outer layer recommended)
- Sturdy, broken-in footwear (hiking shoes or robust sneakers; no open-toed shoes)
- Rain jacket and/or umbrella (we proceed rain or shine) Sun protection (hat, sunscreen, sunglasses)
- 1L water bottle (no refill stations on-site) Small backpack (to carry personal items; space on transport is limited)

Optional Items

- Field notebook & supplies, scale bar, hand lens (no hammers please)
- Camera or smartphone (at your own risk; no replacements for damaged equipment)

Notes

- No catering: Packed lunch and water provided by EAGE but pack your own snacks; no food vendors on-site.
- Restrooms: Limited access in the middle of the day; plan accordingly.
- Safety: Participants are responsible for personal well-being and equipment.



OPENING ADDRESS SPEAKER



Dr. Aiman M. Bakhorji

Director of Geophysical Imaging Department
Aramco Exploration

KEYNOTE SPEAKERS



Prof. Tor Arne Johansen

Professor in Reservoir Geophysics
University of Bergen



Maurice Gidlow

Geophysical Advisor
Rhino Resources



Per Avseth

Geophysical Advisor and CTO
Dig Technology

TECHNICAL PROGRAMME

Field Trip | Sunday, 9 November

THE GEOLOGY OF CAPE TOWN & CAPE PENINSULA	
09:00	Depart from Radisson Blu Hotel
10:00	Stop 1 - Hout Bay Beach (2 hours)
12:00	Depart for lunch
12:30	Lunch Break - On the Beach
13:30	Depart for Stop 2
14:00	Stop 2 - Chapman's Peak Lookout Point (2 hours)
16:00	Depart to Hotel - On the bus discussions
17:30	Arrive at Radisson Blu Hotel

Oral Presentations | Monday, 10 November

GRANGER ROOM 1 & 2	
08:00	Registration & Welcome Coffee
08:30	HSSE From Hotel
08:35	Welcome by Co-Chairs Omar Afif (Aramco) & Per Avseth (DIG Technology)
08:50	Opening Address by Omar Afif (Aramco) on behalf of Dr. Aiman Bakhorji, Director of Geophysical Imaging (Aramco)
Session 1 - Data Conditioning & Feasibility Session Chairs: Cordelia Emeledoh (SLB), Jelle Boels (Shell) Back up: Omar Afif (Aramco)	
09:20	Keynote 1 - Rock physics Diagnostics of Injectites versus Motherbeds in a North Sea Turbidite Field - Per Avseth (Dig Technology)
09:50	Error Analysis in Rock Physics Modelling - B. Khadem ^{1*} , M.R. Saberi ² ¹ University of Stavanger; ² GeoSoftware
10:15	Morning Coffee Break
10:45	Petrophysical Characterization of Parana-Etendeka Magmatic Province for Geological Modeling - M. De Simone ^{1*} , T. Perry ¹ , C. Rodriguez ¹ , D. Roehl ^{1,2} ¹ PUC-Rio / Tecgraf Institute; ² PUC-Rio / Department of Civil and Environmental Engineering
Session 2 - Applied Rock Physics Part 1 Session Chairs: Per Avseth (Dig Technology), Rudi Lubbe (Aramco)	
11:10	Impact of Seal and Reservoir Heterogeneity on Quantitative Interpretation for Characterization of Coastal Dunes - Z. Alkhadrawi ^{1,2*} , A. Elhusseiny ² ¹ Aramco; ² King Fahd University for Petroleum and Minerals
11:35	Lunch Break - Tabagos Restaurant



12:35	Evaluating the Maturity of a Rock-Physics based Seismic Reservoir Characterization Automated Sequence - A. Murineddu*, A. Paxton ¹ SLB
13:00	Supporting Investment Decision Quality through Integration of Petrophysical and Geophysical Data; Case Study from Southern Africa - A. Geisslinger ^{1*} ¹ Shell International
13:25	Panel Discussion
14:10	Afternoon Coffee Break
Session 3 - Core Display	
14:40	Introduction to Core Display & Review Data
15:00	Team Exercise – Core Viewing, Data Integration, and Appraisal Recommendation
16:00	Close-out
16:15	Closing Remarks by Co-Chairs
16:25	End of Day 1

Disclaimer: The programme is confirmed as of publishing date and may be subject to change without prior notice.

Oral Presentations | Tuesday, 11 November

GRANGER ROOM 1 & 2	
Full Day - Core Display throughout the Day	
08:00	Registration & Welcome Coffee
08:30	Welcome by Co-Chairs Omar Afif (Aramco) & Per Avseth (DIG Technology)
Session 4 - Applied Rock Physics Part 2 Session Chairs: Rudi Lubbe (Aramco), Jelle Boels (Shell)	
08:40	Keynote 2 - Unlocking the Ultra-deep with the Ultra-fars - Maurice Gidlow (Rhino Resources)
09:10	Modelling Time-lapse Seismic Data in Rocks with Multiple Fracture Sets - M. Chapman ^{1*} , G. Papageorgiou ² ¹ University of Edinburgh; ² Mantis Geophysics Ltd.
09:35	Integrated Petrophysical And Geomechanical Assessment Of Reservoir For CO2 Storage In The Bredasdorp Basin, South Africa - Y. Olayinka ^{1*} , O. Eruteya ² , M. Opuwari ¹ ¹ University Of The Western Cape; ² University of Geneva; ³ University of the Western Cape
10:00	Morning Coffee Break
10:30	Rock Physics as a Constraint in Acoustic Full Waveform Inversion: Insights from a Land Seismic Study - A. Alkhunaizi ^{1*} , M. Ahmed ¹ , Y.S. Kim ¹ , H. Salim ¹ ¹ Saudi Aramco
10:55	Use of Azimuthal AVO Inversion to Improve Fracture Model for Dynamic Modelling and Producer Injector Relationships - A. Mukherjee ^{1*} , A. Murineddu ¹ , P. Shukla ¹ , R. Bedoya ¹ , G. Riley ¹ , S. Harrington ¹ ¹ Schlumberger
11:20	A Comprehensive Integrated AI-Workflow to Optimize Future Well Placement in a Complex Clastics Reservoir, Kuwait - L. Hayat ^{1*} , A. Elkhateeb ² , M.M. Mihai ² , S. Kumar ² , V. Naik ¹ ¹ Kuwait Oil Company; ² SLB
11:45	Lunch Break - Tabagos Restaurant
Session 5 - Applied Rock Physics Part 3 Session Chairs: Omar Afif (Aramco), Per Avseth (Dig Technology)	
12:45	Exploring 4D Seismic Detectability with Simulation Sensitivity Analysis - A. Paxton ^{1*} , J. Butt ¹ , S. Harrington ¹ ¹ SLB
13:10	Factors controlling static to dynamic empirical relationships in marginal marine clastics - Z. Alkhadrawi ^{1*} , F. Almutairi ¹ ¹ Aramco
13:35	Afternoon Coffee Break
14:05	Seismic Interpretation of Carbonate Reservoirs Using Rock Physics Modeling - A. AlAbbad ^{1*} , T. Almahamidh ¹ , A. Perbawa ¹ , Y. AlZayer ¹ ¹ Saudi Aramco
14:30	A robust Approach to Facies Inversion using Relative Rock Physics - A. Msolo ^{1*} , M. Gidlow ¹ , W. Cheng ¹ ¹ Rhino Resources
14:55	Panel Discussion
15:50	Closing Remarks by Co-Chairs
16:00	End of Day 2
19:00	Workshop Dinner - Cape Town Fish Market Clocktower V&A Waterfront

Oral Presentations | Wednesday, 12 November

GRANGER ROOM 1 & 2	
Full Day - Core Display throughout the Day	
08:00	Registration & Welcome Coffee
08:30	Welcome by Co-Chairs Omar Afif (Aramco) & Per Avseth (DIG Technology)
Session 6 - Theoretical Rock Physics & Laboratory Rock physics Omar Afif (Aramco) Laila Hayat (Kuwait Oil Company)	
08:40	Keynote 3 - Process-based Estimation of Seismic Properties of Shales, Sands and In Between - Prof. Tor Arne Johansen (University of Bergen)
09:10	Rock Physics Modelling of Shale Siagenesis Constrained by Thermal and Burial History - P. Avseth ^{1*} , I. Lehocki ¹ , D. Daudina ² , D. Leslie ² ¹ Dig Technology; ² OMV Norge
09:35	Applicability of Fluid Substitution in Carbonates - T. Müller ¹ , F. Bouchaala ² , T. Chen ^{1*} ¹ University of Petroleum (East China); ² Khalifa University
10:00	Morning Coffee Break
10:30	Acoustics Response of Granular Porous Media with Wettability Changes - Y. Chen ^{1*} , L. Fu ^{1,2} , T. Müller ^{1,3} ¹ China University Of Petroleum (East China); ² Qingdao National Laboratory for Marine Science and Technology; ³ Centro de Investigación Científica y de Educación Superior de Ensenada
10:55	Laboratory Evidence of S-Wave Velocity Anisotropy in Rotondo Granite - N. Keutchafo Kouamo ^{1*} , M. Balcewicz ¹ , E.H. Saenger ^{1,2,3} ¹ Bochum University of Applied Sciences; ² Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG, Bochum; ³ Ruhr University Bochum
11:20	Panel Discussion
12:05	Lunch Break - Tabagos Restaurant
Session 7 - Digital Transformation & Energy Transition and CCUS / Renewable Energy Session Chairs: Rudi Lubbe (Aramco), Mark Chapman (University of Edinburgh)	
13:05	Advancing Deep Learning Predictions with Facies-Specific Porosity Realizations - R. Lubbe ^{1*} , M. Kharji ¹ , M. Benalshaikh ¹ ¹ Saudi Aramco
13:30	Comparative Analysis between Machine Learning Algorithms and Multilinear Regressions for Petro-elastic Modeling (PEM) and Seismic Petrophysics - O. Aly ^{1*} ¹ Schlumberger
13:55	Afternoon Coffee Break
14:25	Seismic Monitoring of the Injected CO2 in Depleted Hydrocarbon Reservoir - J. Sharifi ^{1*} , N.H. Mondol ² , M.R. Saberi ³ , J. Fortin ⁴ ¹ Ferdowsi University of Mashhad; ² University of Oslo and NGI; ³ GeoSoftware; ⁴ Ecole Normale Supérieure
14:50	4D Feasibility Study of a Carbon Storage Project in Bredasdorp Basin, South Africa - E. Saffou [*] , M. Manzi, R. Durrheim ¹ University of Witwatersrand
15:15	Panel Discussion & Closing Remarks by Chair
16:00	Close of Workshop

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REGISTRATION FEES (WORKSHOP & FIELD TRIP)



(All registration rates are in USD)

REGISTERED AND PAID	Early Registration 14/7/25 - 1/10/25	Regular Regi- stration 2/10/25 - 22/10/25	Late Registra- tion 23/10/25 - 12/11/25
EAGE Green Member ^{1,5}	1150	1400	1600
EAGE Bronze/Silver/Gold Member ^{1,5}	990	1250	1450
EAGE Platinum Member ^{1,5}	990	990	990
Non-member ³	1250	1500	1700
EAGE Student Green Member ^{1,2,5}	375	425	475
EAGE Student Bronze/Silver/Gold Member ^{1,2,5}	300	350	400
Student Non-member ^{2,3,4}	400	450	500

VENUE

Radisson Blu Collection Hotel, Waterfront Cape Town
100 Beach Road, Granger Bay Blvd, Mouille Point,
Kapstadén, 8002, South Africa

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