

First EAGE Workshop on the Role of Artificial Intelligence in Full Waveform Inversion

Cartagena, Columbia
12-13 September 2024

ISBN: 979-8-3313-0817-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by the European Association of Geoscientists & Engineers (EAGE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)
at the address below.

European Association of Geoscientists & Engineers (EAGE)
PO Box 59
3990 DB Houten
The Netherlands

Phone: +31 88 995 5055
Fax: +31 30 634 3524

eage@eage.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Deep Learning Inversion for FWI Quality Control	1
<i>A. Heir, S. Aghayev</i>	
Evolving Earth Model Building Flows: Elastic Full-Waveform Inversion for OBN Survey in Santos Basin.....	6
<i>C. Parekh, M. Carneiro, N.L. Cadado, J.I. Da Cruz, P. Barros, E. Saragoussi, B. Quijano</i>	
Physics-Informed Neural Network for the Inverse Seismic Problem Using Neural Tangent Kernels.....	12
<i>J. Bohórquez, S. Abreo, A. Ramirez, S. Gil</i>	
Multi Component Transformer-Based Low Frequency Extrapolation for Elastic FWI.....	18
<i>H. Tang, X. Cheng, M. Liu, B. Bai, Q. Wu</i>	
Exploring Low-Frequency Extrapolation: A Comparative Study of U-Nets with ResNet Encoders in Geophysical Data	25
<i>L. Bernal, C. Leão, M. Oliveira, O. Mojica, J. Maciel, A. Wyzykowski, R. Figueiredo</i>	
How Important is the Seismic Data for a Neural Network Connected to an FWI Inversion?	30
<i>A.P.O. Muller, J.C. Costa, C.R. De Bom, B.S. Silva</i>	
What is Our a Priori Information? an Initial Attempt at Generating Representative Earth Models	35
<i>M. Roberts, O. Brusova, K. Gonzalez, A. Valenciano</i>	
The Quest for Machine Learned Priors for Full Waveform Inversion.....	41
<i>T. Alkhalifah, H. Tuafik, F. Wang</i>	
Clifford Fourier Neural Operators for Learning the Multi-Components Elastic Wavefields.....	44
<i>T. Zhang, K. Innanen</i>	
Field Data Inversion with RNN-Based FWI and Uncertainty Quantification: Applications to Snowflake 1 Data Set.....	49
<i>T. Zhang, K. Innanen</i>	

Author Index