

# Contents

<b>Preface</b>	7
<b>Summary: WIT report 2011</b>	9
<b>I Imaging</b>	13
• <b>Double-square root traveltine approximation for converted waves</b> . . . . .	15
<i>I. Abakumov, B. Schwarz, C. Vanelle, B. Kashtan, and D. Gajewski</i>	
• <b>Stabilized least-squares imaging conditions for common-shot wave-equation migration</b>	25
<i>B. Amaro, J. Schleicher, A. Novais, J. C. Costa, and L. T. Santos</i>	
• <b>Microtremor Localizaion</b> . . . . .	39
<i>M. Behzadi and D. Gajewski</i>	
• <b>Migration velocity analysis with diffraction events using residual moveout</b> . . . . .	57
<i>T. A. Coimbra, J. J. S. Figueiredo, A. Novais, and J. Schleicher</i>	
• <b>Iterative methods for 3D implicit finite-difference migration using the complex Padé approximation</b> . . . . .	71
<i>C. A. N. Costa, I. S. Campos, J. C. Costa, F. A. Silva Neto, J. Schleicher, and A. Novais</i>	
• <b>Diffraction imaging in three dimensions with kinematic wavefield attributes</b> . . . . .	85
<i>S. Dell and D. Gajewski</i>	
• <b>Automatic detection and imaging of diffraction points using pattern recognition</b> . . . .	97
<i>J. J. S. de Figueiredo, J. Schleicher, F. Oliveira, E. Esmi, L. Freitas, A. Novais, P. Sussner, and S. Green</i>	
• <b>Three-dimensional Complex Padé FD Migration: splitting and corrections</b> . . . . .	111
<i>D. Mondini, J. C. Costa, J. Schleicher, and A. Novais</i>	
• <b>Smoothing kinematic wavefield attributes to reduce random noise and enhance signal-to-noise ratio in seismic imaging</b> . . . . .	124
<i>D. Rueda, J. H. Faccipieri, and M. Tygel</i>	
• <b>Numerical Moveout Estimation for Migration Velocity Analysis in Super-Gathers</b> . .	137
<i>M. Sakamori and R. Biloti</i>	
• <b>The recursive stacking operator (RSO) Part 1: from RSO to CRS parameters</b> . . . . .	146
<i>B. Schwarz, C. Vanelle, and D. Gajewski</i>	
• <b>The recursive stacking operator (RSO) Part 2: Application to heterogeneous media</b> .	158
<i>B. Schwarz, C. Vanelle, and D. Gajewski</i>	
• <b>RSO: a new multiparameter stacking operator for an/isotropic media</b> . . . . .	173
<i>C. Vanelle, M. Bobsin, P. Schemmert, B. Kashtan, and D. Gajewski</i>	
• <b>A CRS-type stacking operator for converted waves</b> . . . . .	179
<i>C. Vanelle, B. Kashtan, I. Abakumov, and D. Gajewski</i>	
<b>II Modeling</b>	189
• <b>On the elastic wave equation for weakly anisotropic VTI media</b> . . . . .	191
<i>R. Blout, J. Schleicher, and L. T. Santos</i>	

<ul style="list-style-type: none"> <li>• <b>Shear-wave anisotropy by aligned cracked inclusions: Frequency and attenuation properties</b> . . . . . 204</li> <li style="padding-left: 2em;"><i>J. J. S. de Figueiredo, R. R. Stewart, J. Schleicher, N. Dyaur, B. Omoboya, R. Wiley, and A. William</i></li> </ul>	204
<b>III Full waveform inversion</b>	219
<ul style="list-style-type: none"> <li>• <b>3D elastic full waveform inversion of random medium - first results</b> . . . . . 221</li> <li style="padding-left: 2em;"><i>S. Dunkl, A. Kurzmann, and T. Bohlen</i></li> <li>• <b>On the importance of attenuation in acoustic waveform tomography of marine seismic data</b> . . . . . 230</li> <li style="padding-left: 2em;"><i>A. Kurzmann, A. Przebindowska, and T. Bohlen</i></li> <li>• <b>Scattering-based decomposition of sensitivity kernels for full waveform inversion</b> . . . 247</li> <li style="padding-left: 2em;"><i>D. L. Macedo, I. Vasconcelos, and J. Schleicher</i></li> <li>• <b>The role of density in acoustic full waveform inversion of marine reflection seismics</b> . 261</li> <li style="padding-left: 2em;"><i>A. Przebindowska, A. Kurzmann, D. Köhn, and T. Bohlen</i></li> <li>• <b>On the effects of geometrical spreading corrections for a 2D full waveform inversion of recorded shallow seismic surface waves</b> . . . . . 277</li> <li style="padding-left: 2em;"><i>M. Schäfer, L. Groos, T. Forbriger, and T. Bohlen</i></li> </ul>	277
<b>IV Other topics</b>	289
<ul style="list-style-type: none"> <li>• <b>2-D constant-offset diffraction separation</b> . . . . . 291</li> <li style="padding-left: 2em;"><i>E. G. Asgedom, L.-J. Gelius, and M. Tygel</i></li> <li>• <b>Implementation Aspects of Eigenstructure-based Velocity Spectra</b> . . . . . 300</li> <li style="padding-left: 2em;"><i>T. Barros, R. Lopes, J. M. T. Romano, and M. Tygel</i></li> <li>• <b>GêBR: a free seismic processing interface</b> . . . . . 312</li> <li style="padding-left: 2em;"><i>R. Biloti</i></li> <li>• <b>Comparison between normalized cross-correlation and semblance coherency measures in velocity analysis</b> . . . . . 318</li> <li style="padding-left: 2em;"><i>V. Das and D. Gajewski</i></li> <li>• <b>Optimization of Common Reflection Surface (CRS) attributes based on a hybrid method</b> 325</li> <li style="padding-left: 2em;"><i>E. Minarto and D. Gajewski</i></li> <li>• <b>Sensitivity analysis of the non-hyperbolic common reflection surface</b> . . . . . 333</li> <li style="padding-left: 2em;"><i>M. Tygel, H. Perroud, R. Lopes, and R. Krummenauer</i></li> </ul>	333
<b>The Wave Inversion Technology Consortium</b>	343
<b>WIT research personnel</b>	349
<b>List of WIT sponsors</b>	359