3-D Reflection seismology

Geophysics 280 — MWF 10:00-10:50

3 units with labs, 2 units without. Graded or P/NC option

Professor: Biondo Biondi – biondo@sep – ESMB 369
TA: Nick Vlad – nick@sep – ESMB 465

Class Web sitte - http://sepwww.stanford.edu/class/280/
Lecture notes - http://sepwww.stanford.edu/sep/biondo/Lectures/index.html

Lectures Schedule

Migration

- 3/31 – Introduction (Chapter 0)
- 4/2 – 3-D Geometries (Chapter 1)

- 4/5 – Kirchhoff prestack migration (Chapter 2)
- 4/7 – Sep3D software (Appendix 1)
- 4/9 – Kirchhoff prestack migration (Chapter 2) and NMO + DMO (Chapter 3)

- 4/12 – DMO and prestack partial migration (Chapter 3)
- 4/14 – AMO and prestack partial migration (Chapter 3)
- 4/16 – Two-pass methods for 3-D migration (Chapter 3)

- 4/19 – Wavefield-continuation migration (Chapter 4)
- 4/21 – Numerical methods for wavefield-continuation (Chapter 5)
- 4/23 – Common image gathers in offsets and angles (Chapter 6)

- 4/26 – Common image gathers in 3-D (Chapter 6)
- 4/28 – Common-azimuth migration (Chapter 7)
- 4/30 – Narrow-azimuth migration (Chapter 7)

- 5/3 – Imaging and aliasing (Chapter 8)
- 5/5 – Imaging and aliasing (Chapter 8)
- 5/7 – Imaging and irregular geometries (Chapter 9)

Velocity estimation

- 5/10 – Stacking velocity and Dix inversion (Chapter 10)
- 5/12 – Traveltime tomography and stacking-velocity inversion (Chapter 10)
- 5/14 – Migration velocity analysis (Chapter 11)

- 5/17 – No Class – SEP Meeting
- 5/19 – No Class – SEP Meeting
- 5/21 – Residual moveout analysis and residual migration (Chapter 11)

- 5/24 – Vertical and tomographic velocity updating (Chapter 11)
- 5/26 – Wave-equation migration velocity analysis (Chapter 12)
- 5/28 – Wave-equation migration velocity analysis (Chapter 12)

- 5/31 – No Class – Memorial Day
- 6/2 – Question and answers
- 6/4 – Final (8:30-11:30)