

LITERATURE REVIEW PRESENTATION

Projects: A paper is suggested for several topics just as a pointer. You are free to choose a good paper or papers that you find (but keep in mind that it should tell a good story) and you found it interesting and close to what are you planning to do. Try, through these papers, to open new horizons in your research. Having multiple papers could potentially make the presentation richer.

Suggestions:

- Minimum Entropy Deconvolution and applications (Wiggins, R. A., 1978, Minimum entropy deconvolution: *Geoexpl.*, v. 16, p. 21-35).
- Multiple attenuation based on Ryu's method (Ryu, J. V., 1982, Decomposition (DECOM) approach applied to wave-field analysis with seismic reflection records, *Geophysics, Soc. of Expl. Geophys.*, 47, 869-883).
- Eigen-filtering of seismic data (Freire, S. L. M. and Ulrych, T. J., 1988, Application of singular value decomposition to vertical seismic profiling: *Geophysics, Soc. Of Expl. Geophys.*, 53, 778-785).
- Multiple suppression using the Parabolic Radon Transform (Hampson, D., 1986, Inverse velocity stacking for multiple elimination: *J. Can. Soc. Expl. Geophys.*, 22, no., 01, 44-55; Also, check An Y., Y. J. Gu, and M. Sacchi, Imaging mantle discontinuities using least-squares Radon transform. *J. Geophys. Res.*, **112**, doi:10.1029/2007JB005009, 2007; or Gu & Sacchi, *Surv. Geophysics*, a review, 2009).
- Wavelet transforms and (check and Numerical Recipes, and Daubechies, I., 1990, The wavelet transform, time-frequency localization and signal analysis, *IEEE Trans Inf. Theory*, v. 36 (5), 961-1005).
- Maximum Kurtosis phase compensation (Cambois, G. and Hargreaves, N. D., 1994, Zero-phase conversion of marine data using one-parameter phase filters and kurtosis maximization, 64th Ann. Internat. Mtg: Soc. Of Expl. Geophys., 1591-1594).
- Velocity analysis using coherence measures (Key, S. C. and Smithson, S. B., 1990, New approach to seismic-reflection event detection and velocity determination: *Geophysics, Soc. Of Expl. Geophys*, 55, 1057-1069).
- Adaptive filtering and its applications in seismology (many references and books).
- Examples of the Use of the Fourier Transform in Applied Seismics (Frequency-Wavenumber Analysis of Seismic Signals, The T-p transform and

its Application in Seismics, Migration of Seismic Sections in the Frequency-Wavenumber Domain, Calculation of Synthetic Seismograms, Estimation of the Absorption and Phase Velocity of Seismic Waves)

- Fitting multiple sinusoids for irregularly sampled data (Bourguignon & Carfantan, New methods for fitting multiple sinusoids from irregularly sampled data, *Statistical Methodology*, 5, 2008 318-327; Ferraz-Mello, Estimation of periods from unequally spaced observations, *The Astronomical Journal*, 86, 619-624, 1980).
- The genetic algorithm approach to inversions (Check Numerical Recipes and references therein; Many good papers feel free to suggest).
- Design of digital filters (many interesting Chapters in Kulhanek book entitled Digital filtering in Geophysics)
- Seismic noise correlations, its applications in exploration and/or regional structural analysis (Snieder et al., 2009, *Surv. In Geophys.*, Special Volume (Gu Ed) downloadable at my website www.phys.ualberta.ca/~jgu/publications/survey_2009/; For reference, check Brzak et al., 2009, *Geophys., Geochem, Geosys.*, 10, doi:10.1029/2008GC002234 ---- again downloadable at www.phys.ualberta.ca/~jgu/publications/brzak_etal09.pdf)
- Inversions using fast matching method
- F-K method and applications
- Transforms and Filters for Stochastic Processes (from *Signal Analysis: Wavelets, Filter Banks, Time-Frequency Transforms and Applications*. Alfred Mertins Copyright © 1999 John Wiley & Sons Ltd Print ISBN 0-471-98626-7 Electronic ISBN 0-470-84183-4)
- OTHERS