



Universidade Federal do Pará  
Instituto de Geociências  
Programa de Pós-Graduação em Geofísica

**EMENTA**

<b>Código</b>	<b>Disciplina</b>		
PPGGF0012	TEORIA DA INVERSÃO II		
<b>Nível</b>	<b>Carga Horária</b>	<b>Créditos</b>	
Mestrado/Doutorado	60	04	
<b>Ementa:</b> Estimadores robustos; Teoria de Backus e Gilbert; Incorporação de informação geológica a priori; Estimadores Bayesianos; Desenho de experimentos; Perspectivas futuras.			
<b>Bibliografia:</b> Backus, G. E., and Gilbert, F., 1967, Numerical application of a formalism for geophysical inverse problems: Geophys. J. R. Astr. Soc., 13 , 247-276. Backus, G. E., and Gilbert, F., 1968, The resolving power of gross Earth data: Geophys. J. R. Astr. Soc., 16, 169-205. Beck, J. V. e Arnold, K. J., 1977, Parameter estimation in engineering and science: John Wiley and Sons Bergen, K. J., Johnson, P. A., Hoop, M. V. e Beroza, G. C. Machine learning for data-driven discovery in solid Earth geoscience. Science 363, 1299 (2019) Glenn, W. E., e Ward, S. H., 1976, Statistical evaluation of electrical sounding methods. Part I: experiment design: Geophysics, v. 41, p. 1207-1221. Huestis, S. P. e Parker, R. L., 1977, Bounding the thickness of the oceanic magnetized layer: Journal of Geophysical Research, v. 82, p. 5293-5303. Kim, Y. e Nakata, N.; Geophysical inversion versus machine learning in inverse problems, The Leading Edge, December, 2018			

- Kirsch, A. An Introduction to the Mathematical Theory of Inverse Problems Third Edition, 400 p
- Parker, R.L , 1977, Understanding inverse theory, Ann. Rev. Earth and Planet. Sci., 5, 35-64.
- Parker, R. L., 1974, Best bounds on density and depth from gravity data: Geophysics, 39, 644-649.
- Pujo, J. M., 2013, The Backus-Gilbert method and their minimum-norm solution Geophysics, 78, W9-W30.
- Richard, V., Bayer, R., e Cuer, M., 1984, An attempt to formulate well-posed questions in gravity: Application of linear inverse techniques to mining exploration: Geophysics, v. 522, p. 1265-1278.
- Tran, K. T. e Hiltunen, D. R., 2012, One-Dimensional Inversion of Full Waveforms using a Genetic Algorithm. JEEG, v.17, p. 197–213
- Titus, W. J.; Titus, S. J. e Davis, J. R., 2017, A Bayesian approach to modeling 2D gravity data using polygons. Geophysics, v. 82, p. G1-G21.
- Zhdanov, M. S., Inverse Theory and Applications in Geophysics Second Edition. 633p. Elsevier, 2002