GP 281GEOPHYSICAL INVERSE THEORY
Winter 2020
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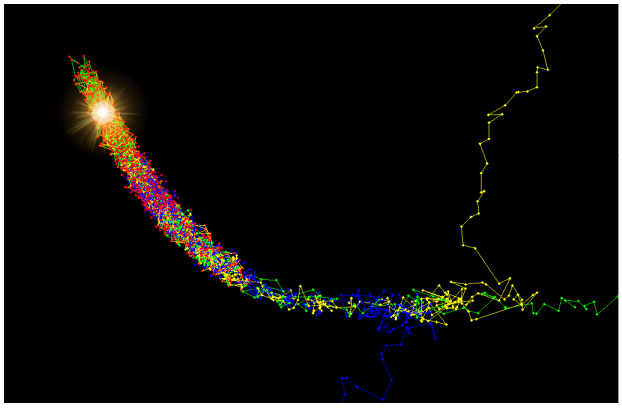
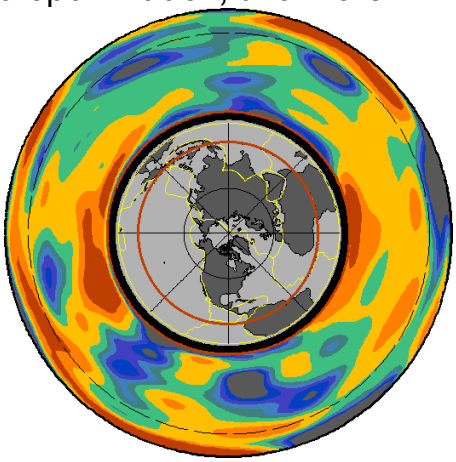
MWF 11:30 – 12:30

Theory of least squares, normal equations; Underdetermined problems and minimum norm solutions; Generalized matrix inverses and the Singular Value Decomposition; Resolution kernels and resolution-variance trade-off; Maximum likelihood and Bayesian estimation; Conjugate Gradients; Seismic tomography; Simulated Annealing, Markov Chain Monte Carlo (MCMC); Nonlinear inversion, non-negative least squares, and PDE constrained optimization, and more!





Course Logistics: Lectures supplemented by homework**.** Homework exercises will be designed to illustrate methods and to give practical experience with real and simulated data. Many exercises will involve writing routines to invert data in MATLAB. Sample problems: Vertical Seismic Profiling, earthquake location, seismic tomography.