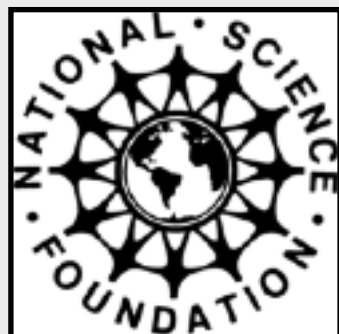


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CAREER: Numerical linear algebra, random matrix theory and applications

The inverse scattering transform

The inverse scattering transform is a method to “solve” an integrable evolution partial differential equation (PDE). The resulting methods share commonalities with the Fourier transform method for solving linear, constant coefficient PDEs:

- The initial condition is transformed to a function of a “spectral” variable

$$q_0(x) \mapsto \hat{q}_0(k).$$

- The time evolution of this spectral function is trivial

$$\hat{q}_0(k) \mapsto \hat{q}_0(k)e^{-i\omega(k)t}.$$

- The transform is invertible

$$\hat{q}_0(k)e^{-i\omega(k)t} \mapsto q(x, t).$$

