

nonlinear analogues of $e^{i(kx-\omega t)}$ for integrable systems

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The similarity between the inverse scattering method for solving nonlinear integrable systems and the Fourier transform method for solving linear PDEs has been known for a while. But do there exist nonlinear analogues of $e^{i(kx-\omega t)}$, the Fourier representation formula, amplitude modulation and other things naturally appearing as applications of the Fourier transform? The answer will be discussed in the talk.