Small data scattering for nonlinear Schrödinger equations

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This talk is based on a recent joint work with K. Nakanishi. We unify two methods of small data scattering for nonlinear Schrödinger equations. The first one is based exclusively on the fractional derivatives and Strichartz type estimates and works for various sums of power nonlinearities u^p and $|u|^{p-1}u$ with $1+4/n \le p < \infty$. The second one is based on the fractional powers of generators of Galilei transforms and the associated Strichartz estimates and works for various sums of power nonlinearities $|u|^{p-1}u$ with $1+2/n < p \le 1+4/n$. To make everything invariant under space-time scaling, we introduce the Lorentz space in the time variable, so that we can deal with various sums of power nonlinearities with $1+2/n < p < \infty$.

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