

# Global well-posedness and scattering for the defocusing, $L^2$ -critical, nonlinear Schrödinger equation when $d \geq 3$

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**Abstract:** In this talk we study the defocusing,  $L^2$  critical initial value problem

$$\begin{aligned}iu_t + \Delta u &= |u|^{4/d}u, \\ u(0, x) &= u_0 \in L^2(\mathbf{R}^d).\end{aligned}\tag{1}$$

We prove (??) is globally well-posed and scattering for all  $u_0 \in L^2(\mathbf{R}^d)$ . The principal new ingredient is a frequency localized interaction Morawetz estimate obtained by an induction on frequency argument. We use the induction on frequency argument to estimate the Strichartz norm at high frequencies, which in turn are used to estimate the errors that arise in the Morawetz estimates when truncating in frequency.