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*Perturbation Expansion and $N$-th Order Fermi Golden Rule of the Nonlinear Schrödinger Equations*

In this presentation I will show the asymptotic stability of trapped solitions of generalized nonlinear Schrödinger equations with external potentials. We use Fermi Golden rule (FGR) to show the dynamics of the soliton which is close to Newton's equation plus a radiation term. We compute the expressions for the fourth and the sixth order Fermi Golden Rules (FGR) by perturbation expansion.