SPACE–TIME ANALYTIC SMOOTHING EFFECT
FOR THE NONLINEAR SCHRÖDINGER EQUATIONS
WITH NONLINEARITY OF EXPONENTIAL TYPE

Gaku Hoshino

Abstract. In this paper, we consider the global Cauchy problem for the nonlinear Schrödinger equations with nonlinearity of exponential type in higher space dimensions \( n \geq 2 \). In particular, we study the global existence of the solutions to the Cauchy problem with small data in the framework of intersection of Sobolev and weighted Lebesgue space: \( H^{n/2} \cap \mathcal{F}H^{n/2} \). More precisely, we show that if data decay exponentially in \( H^{n/2} \cap \mathcal{F}H^{n/2} \) then for any time \( t \neq 0 \), solutions are real-analytic in both space and time variables and have analytic continuation.


Keywords and phrases: Nonlinear Schrödinger equations, nonlinearity of exponential type, space-time analytic smoothing effect.

REFERENCES


