MULTISCALE ANALYSIS, MODELING, AND SIMULATION

Mini Course, Mathematics & Physics Unit,
Top Global University Project, Waseda University

Date: February 23-24, 2015 / 10:00-17:00
Venue: 06 Room, 17th Floor, 51 Bldg.,   /   早稲田大学 西早稲田キャンパス 51 号館 17 階 06 室

Mini Course   10:00 ‐ 11:00 / 11:10 ‐ 12:10
Vladimir Georgiev (University of Pisa)

Kato - Ponce inequality and its applications to NLS

1) Introduction: Basic facts about Bernstein inequality and Paley decomposition.
   Energy and Strichartz estimates for Schrodinger equation.

2) Kato Ponce inequality and decay for cubic one dimensional NLS with small data initial data

3) Introduction to perturbation phenomena: Bernstein and Kato-Ponce inequality in presence of
   potential. Applications to global behavior and decay for supercritical one dimensional NLS.

Mini Course   14:00 ‐ 15:00 / 15:30 ‐ 16:30
Nicola Visciglia (University of Pisa)

Scattering Theory for NLS, several point of view

LECTURE 1: In the first part of the lecture I will recall quickly the classical strategy by Ginibre-Velo
in dimension d>2 and by Nakanishi in dimension d=1,2; in the second part of the lecture I will first
recall the interaction Morawetz estimate and then I will show, based on a suitable localized
Gagliardo-Nirenberg inequality, how it implies the scattering.

LECTURE 2: I will recall the Kenig-Merle strategy and I will show how it can be adapted to the case
of NLS with a delta interaction.