

第 229 回 広島数理解析セミナー (2018 年度)

Hiroshima Mathematical Analysis Seminar No.229

日時 : 11月30日(金) 15:00 ~ 17:30

場所 : 広島大学理学部 B707

今回は2件の講演です.

15:00 ~ 16:00

講師 : 川本 昌紀 氏 (東京理科大学)

題目 : Quantum scattering for time-decaying harmonic oscillators

要旨 : By controlling coefficients and decaying order of time-decaying harmonic potentials, the velocity of a quantum particle is decelerated by the effect of harmonic potentials but the particle is non-trapping. Deceleration changes the threshold of decaying order between the short-range class of potentials and long range class of potentials into $1/(1-\lambda)$ for some $0 < \lambda < 1/2$, where λ is determined by the mass of the particle and coefficients of harmonic potentials. In this talk, we consider the quantum system with controlled harmonic potentials. Define the wave operators for this system and suitable scattering subspace. Then, for the short-range potentials $V(t, x)$, which satisfies $|V(t, x)| = o((1 + |x|)^{-1/(1-\lambda)})$, we can prove the existence of wave operators and the range of wave operators coincide with this suitable scattering space. Moreover, we can prove that the $1/(1-\lambda)$ will be a threshold for to exist or nonexistent of the wave operators. The part of talk is based on the joint work with Atsuhide Ishida (Tokyo University of Science).

16:30 ~ 17:30

講師 : Marcello D'Abbicco 氏 (University of Bari)

題目 : Critical exponent(s) for the semilinear fractional diffusive equation(s)

要旨 : In this talk, we will discuss the critical exponent for Cauchy-type problems for the fractional diffusive equation

$$\partial_t^{1+\alpha}u - \Delta u = |u|^p, \quad t > 0$$

where $\alpha \in (0, 1)$. We will show the differences between the problem with Caputo fractional derivative and with Riemann-Liouville fractional derivative, and the influence of the different initial data on the two models. We will obtain global existence of small data solutions in the supercritical case and nonexistence of global solutions in the subcritical one. We will show how the critical case may belong to the existence range or to the nonexistence range, according to the problem studied.

広島数理解析セミナー幹事

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