数理物理学講義のお知らせ

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講義題目：シュレーディンガー方程式の unitary propagator の存在・一意性と正則性

日時：令和 2 年 1 月 31 日(金)16:00~17:30
場所：東京理科大学神楽坂キャンパス 3 号館 6 階 362 教室

講義概要：We report two sets of sufficient conditions for a unique existence of unitary propagator which possesses a “nice convenient" dense invariant subspace for time-dependent Schrödinger equations for N non-relativistic quantum particles in a (classical) electro-magnetic field. The first is a time dependent perturbation of classical results of Leinfelder-Simader or Iwatsuka on the selfadjointness and assumes that every time frozen Hamiltonian H(t) satisfies their conditions, however, that time derivative of the Hamiltonian ∂_t H(t) is bounded by H(t) in the sense of operator or of quadractic form. The second assumes that external field is smooth and grows moderately at spatial infinity so that instantanenous recurrence of singularities cannot happen. This allows time derivatives of inter-particle potentials to have stronger singularities which may not be form-bounded by the Hamiltonian H(t). First result is proved via the abstract theory of temporally inhomogenous semi-groups and the second uses more harmonic analytical argument, Strichartz estimates for vector valued functions, in particular.

この講義は，総合研究院数理モデリングと数学解析研究部門の活動の一環として行われます.

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