

SEMINARIO

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Double-scale Gevrey asymptotics for logarithmic type solutions to singularly perturbed linear initial value problems

Abstract: We examine a family of linear partial differential equations both singularly perturbed in a complex parameter and singular in complex time at the origin. These equations entail forcing terms that combine polynomial and logarithmic type functions in time and that are bounded holomorphic on horizontal strips in one complex space variable. A set of sectorial holomorphic solutions are built up by means of complete and truncated Laplace transforms relatively to time and parameter and Fourier inverse integral in space. Asymptotic expansions of these solutions with respect to time and parameter are investigated and two distinguished Gevrey type expansions in monomial and logarithmic scales are exhibited.

Esta charla es parte del Seminario Iberoamericano de Matemáticas - Sesión 120

Seminario A-125. Facultad de Ciencias.

Jueves 20 de Abril de 2023 (13:00)

Organiza: GIR AFA (Análisis Funcional Aplicado) y GIR ECSING (Ecuaciones y Singularidades)

