

Monash University
School of Mathematical Sciences
Clayton Campus

Analysis and Geometry Seminar

Time: 2 Pm, Friday 18, June 2004

Place: M345

Exponential stability and almost periodic solutions
for linear differential systems in Banach spaces

Constantin Buşe

*West University of Timisoara, România
Department of Mathematics*

Abstract

We consider a mild solution $v_f(\cdot, 0)$ of a well-posed inhomogeneous Cauchy problem

$$\dot{v}(t) = A(t)v(t) + f(t), \quad v(0) = 0, \quad t \geq 0$$

on a complex Banach space X , where $A(\cdot)$ is a periodic or an almost periodic (possibly unbounded) operator-valued function. We prove that $v_f(\cdot, 0)$ belongs to a suitable subspace of bounded and uniformly continuous functions if and only if for each $x \in X$ the mild solution of the homogeneous Cauchy problem

$$\dot{u}(t) = A(t)u(t), \quad u(0) = x, \quad t \geq 0$$

is uniformly exponentially stable. The approach is based on the spectral theory of evolution semigroups.

Convenor: Alan Pryde.