IMAC

Institut Universitari de Matemàtiques i Aplicacions de Castelló

Universitat Jaume I

Institut de Matemàtiques i Aplicacions de Castelló (IMAC)

UNIVERSITAT JAUME•I

Jornada IMAC en Topología Descriptiva y Análisis Funcional

Universitat Jaume I

IMAC, TI1329DS, 24 de septiemnbre de 2014

Programa

11:30 Jerzy Kakol (A. Mickiewicz University, Poznan): The weak topology of a Frechet space.

We study those Fréchet locally convex spaces E which are weakly $\aleph$-spaces (in sense of O'Meara), i.e. under the weak topology E has a σ-locally finite k-network. Every $\aleph_0$-space is an $\aleph$-space, and every $\aleph_0$-space is hereditary separable and Lindelöf. It is known (Michael) that if E is a separable Banach space whose dual is separable then E with the weak topology $\sigma(E, E')$ is an $\aleph_0$-space. Let $E := C_c(X)$ be a Fréchet locally convex space of continuous real-valued functions on a Tychonoff space X endowed with the compact-open topology. The main result states that E under its weak topology $\sigma(E, E')$ is an $\aleph$-space if and only if X is countable if and only if E is a weakly $\aleph_0$-space (in sense of E. Michael). This essentially extends a result of Corson. Several additional facts and open questions are provided.

12:30 Manuel López Pellicer (Universidad Politécnica de Valencia): Nikodym boundedness property in webs.

By $ba(\mathcal{A})$ it is denoted the set of bounded finite measures on an algebra of sets $(\Omega, \mathcal{A})$, endowed with the variation norm. In a recent paper, M. Valdivia say that a subset $\mathcal{B}$ of $\mathcal{A}$ has the Nikodym boundedness property whenever, given an arbitrary subset $H \subset ba(\mathcal{A})$ such that, for each $B \in \mathcal{B}$,

$$\sup\{|\mu(B)| : \mu \in H\} < \infty$$

then H is bounded.

Among other results, Valdivia proved that if Ω is a compact k-dimensional interval in $\mathbb{R}^k$, $\mathcal{A}$ is the algebra of Jordan measurable subsets of Ω, $\mathcal{A} = \cup_n \mathcal{A}_n$, with $\mathcal{A}_n \subset \mathcal{A}_{n+1}$, $n \in \mathbb{N}$, then there exists $m \in \mathbb{N}$ such that $\mathcal{A}_m$ has the Nikodym boundedness property.

For a σ-algebra $\mathcal{A}$, Valdivia proves that if $\mathcal{A} = \cup_n \mathcal{A}_n$, with $\mathcal{A}_n \subset \mathcal{A}_{n+1}$, $n \in \mathbb{N}$, then there exists $m \in \mathbb{N}$ such that $\mathcal{A}_m$ has the Nikodym boundedness property.

We will a present an extension of this last result showing that if $\{\mathcal{A}_{n_1,n_2,\cdots,n_{p-1}n_p} : n_i \in \mathbb{N}, 1 \leqslant i \leqslant p, p \in \mathbb{N}\}$ is an increasing web in $\mathcal{A}$, then there exists a sequence $(m_i)_i$ in $\mathbb{N}$ such that, for each $i \in \mathbb{N}$, $\mathcal{A}_{m_1,m_2,\cdots,m_{i-1}m_i}$ has de Nikodym boundedness property.

Some applications of this result and some open problem will be presented.

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