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Institut Universitari de Matemàtiques i Aplicacions de Castelló
Universitat Jaume I

Institut de Matemàtiques i Aplicacions de Castelló (IMAC)
UNIVERSITAT JAUME·I

IMAC Topology Workshop

Universitat Jaume I

September 16-19, 2016

IMAC, TI1329DS

Program

Friday, September 16

9:30 Dmitri Shakhmatov (Ehime University, Japan): ***Completeness properties in metric spaces and topological groups, with applications to function spaces.***

10:15 Angel Tamariz Mascarúa (UNAM, México): ***Completeness and compactness type properties in spaces of continuous functions.***

Monday, September 19

10:00 Richard Wilson (UAM, México): ***Monotone normality and Lindelöf-type properties.***

10:45 Juan Alberto Martínez Cadena (UAM, México): **Maximal densely countably compact topologies.**

12:00 Gerardo Acosta (UNAM, México): **Transitive dendritic maps.**

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ABSTRACTS

- **Completeness properties in metric spaces and topological groups, with applications to function spaces.** ***Dmitri Shakhmatov (Ehime University, Japan).***

We prove that many completeness properties coincide in metric spaces, precompact groups and dense subgroups of products of separable metric groups. We apply these results to function spaces $C_p(X, G)$ of G-valued continuous functions on a space X with the topology of pointwise convergence, for a separable metric group G. Not only the results but also the proofs are novel even in the classical case when G is the real line.This is a joint work with Alejandro Dorantes-Aldama (Ehime University, Japan)

- **Completeness and compactness type properties in spaces of continuous functions.** ***Angel Tamariz Mascarúa (UNAM, México).***

In this talk we present some results in spaces of continuous functions with the pointwise convergence topology related to completeness and compactness productive properties containing all pseudocompact spaces and contained in the class of Baire spaces. In particular, we will discuss with particular care the so called weak pseudocompactness: a space X is *weakly pseudocompact* if it is G_δ-dense in one of its compactifications.

- **Monotone normality and Lindelöf-type properties.** ***Richard Wilson (UAM, México).***

A space X is *weakly linearly Lindelöf* if for any family $\mathcal{U}$ of non-empty open subsets of X of regular uncountable cardinality κ, there exists $x \epsilon X$ such that every neighbourhood of x meets κ-many elements of $\mathcal{U}$. A space X is *almost discretely Lindelöf* (respectively, *discretely Lindelöf*) if each discrete subset is contained in a Lindelöf subspace (respectively, has Lindelöf closure). Obviously a discretely Lindelöf space is almost discretely Lindelöf and it is a famous open problem of Arhangelskii as to whether or not a discretely Lindelöf space is Lindelöf. We prove first that if a space X belongs to a class from the list $\mathcal{L} = \{$ *weakly Lindelöf spaces, linearly Lindelöf spaces, almost discretely Lindelöf spaces* $\}$, then X is weakly linearly Lindelöf. The main result is that weakly linearly Lindelöf monotonically normal spaces are Lindelöf, and this implies that every weakly Lindelöf monotonically normal space is Lindelöf; this result seems to be new even for linearly ordered topological spaces.

- **Maximal densely countably compact topologies.** ***Juan Alberto Martínez Cadena (UAM, México).***

When we study maximal countably compact, feebly compact and pseudocompact properties, we find some interesting facts. Maximal countably compact spaces were first characterized by A. B. Raha as those spaces in which every countably compact subspace is closed. The results concerning pseudocompactness and feeble compactness were proved by J. R. Porter, R. M. Stephenson and R. G. Woods in 1993 and 1994. In this talk, I will present results concerning maximal densely countably compact topologies in the class of topological spaces and in the class of Tychonoff spaces.

- **Transitive dendritic maps.** ***Gerardo Acosta (UNAM, México).***

A continuum is a compact connected metric space. A dendrite is a locally connected continuum without homeomorphic copies of the simple closed curve S^1. In this talk, given a dendrite X and a transitive map f from X into itself, we will give conditions under which the set of periodic points of f is dense in X. In such cases f turns to be chaotic in the sense of Devaney.