CCSU

DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, November 18

2:00 – 3:00 PM

Maria Sanford, Room 101

EXTENDING CONTINUOUS FUNCTIONS DEFINED ON SUBSETS OF PRODUCTS

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(MA THESIS PRESENTATION)

Abstract: Let X be a topological space and Y be a subspace of X. Y is called C-embedded in X if every real-valued continuous function defined on Y can be extended to a real-valued continuous function on X. For p a point in the product space $X_I:=\Pi_{i\in I}X_i$ and α an infinite cardinal, the α-Σ-product of X_I based at p is the set $\Sigma_\alpha(p):=\{x\in X_I:|\{i\in I:x_i\neq p_i\}|<\alpha\}$.

Milton Ulmer in 1973 found the following three sufficient conditions for a Σ-space to be C-embedded in a product space.

Theorem: Let X_I be a product of T_1-spaces, α be an infinite cardinal and p be a point in X_I. If

1. $\Sigma_\alpha(p)$ has the property that every locally finite collection of open subsets of $\Sigma_\alpha(p)$ has cardinality less than α; or
2. For every $i \in I$, every point $x_i \in X_i$ has a base with cardinality less than α; or
3. For every $i \in I$ and every $x_i \in X_i$ the intersection of every countable family of neighborhoods of x_i is a neighborhood of x_i;

then $\Sigma_\alpha(p)$ is C-embedded in X_I.

In this talk we will go over Ulmer's proof of the above theorem. Then we will compare his proof with the proofs of W. W. Comfort and Ivan S. Gotchev of some recent generalizations of parts 1 and 2 of Ulmer's theorem. At the end we will present the proofs of two new results, joint work with W. W. Comfort and Ivan S. Gotchev, that generalize parts 2 and 3 of Ulmer's result.

For further information:

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