CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, May 4
3:00 – 4:00 PM
Maria Sanford, Room 101

CARDINAL INEQUALITIES
FOR TOPOLOGICAL SPACES

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Abstract: In this talk I will present a recent result, joint work with M. Tkachenko and V. Tkachuk, about the upper bound of the cardinality of Hausdorff spaces that improves the famous Hajnal-Juhász inequality from 1967 that $|X| \leq 2^{\chi(X)c(X)}$, whenever X is a Hausdorff space.

To make the talk accessible for students I will briefly introduce the concepts of ordinal and cardinal numbers, transfinite induction and topological space. Then I will explain the main idea behind the so called "closure method" for proving some cardinal inequalities for topological spaces and will talk about a mistake I recently found in a paper from 1984 written by a well-known mathematician.

I will finish with examples and a proof that the new result really gives better estimate of the cardinality of Hausdorff spaces than Hajnal-Juhász inequality.