

CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, May 1

3:00 – 4:00 PM

Maria Sanford, Room 101

**GENERALIZATIONS OF KNOWN CARDINAL
INEQUALITIES FOR TOPOLOGICAL SPACES**

ALEX KOCH

CENTRAL CONNECTICUT STATE UNIVERSITY

MA IN MATHEMATICS – GENERAL THESIS DEFENSE

Abstract: In General Topology, cardinal functions quantify and generalize various properties of topological spaces. One such topological property is the Urysohn separation axiom, which a topological space satisfies if any two distinct points may be separated by disjoint closed neighborhoods. A related concept is the θ -closure of a set, which is the collection of all points in a space whose closed neighborhoods have a non-empty intersection with the set. While cardinal functions involving the θ -closure have been studied for several decades, generalizations of the Urysohn property have been introduced in recent years, giving different ways to quantify the degree to which points may be separated in a space. We will present some of these generalizations, most notably the non-Urysohn number for singletons, and investigate how this interacts with cardinal functions involving the θ -closure. We will then introduce several new cardinal inequalities for arbitrary topological spaces involving the non-Urysohn number for singletons which generalize known results for Urysohn spaces, including variations of the Arhangel'skii-Sapirovskii inequality.

To join us online use the following link: <https://ccsu.webex.com/meet/gotchev>

For further information: gotchevi@ccsu.edu; 860-832-2839; <http://mathcolloquium.sites.ccsu.edu/>