FLORIDA ATLANTIC UNIVERSITY

Department of Mathematics and Statistics
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PhD Dissertation Defense

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The Spaces of Minimal Prime Elements of Algebraic Frames Without FIP

Thursday, February 29, 9:30am in SE 215

Advisor: Dr. Papiya Bhattacharjee

The dissertation investigates algebraic frames and their spaces of minimal prime elements with respect to the Hull-Kernel topology and Inverse topology. Much work by other authors has been done in obtaining internal characterizations in frame-theoretic terms for when these spaces satisfy certain topological properties, but most of what is done is under the auspices of the finite intersection property. In the first half of this dissertation, we shall add to the literature more characterizations in this context, and in the second half we will study general algebraic frames and investigate which, if any, of the known theorems generalize to algebraic frames not necessarily with the FIP.

Throughout this investigative journey, we have found that certain ideals and filters of algebraic frames play a pivotal role in determining internal characterizations of the algebraic frames for when interesting topological properties occur in its space of minimal prime elements. In this dissertation, we investigate completely prime filters and compactly generated filters on algebraic frames. We introduce a new concept of subcompact elements and subcompactly generated filters. One of our main results is that the inverse topology on the space of minimal prime elements is compact if and only if every maximal subcompactly generated filter is completely prime. Furthermore, when the space of minimal prime elements is compact, then each minimal prime has what we are calling the compact absoluteness property.

Please contact Dr. Hongwei Long (hlong@fau.edu) for an electronic copy of the dissertation.
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