Formal Concept Analysis and Interchange Spaces

Formal concept analysis (FCA) originated in the 1980’s in the work of Rudolf Wille and has been developed and applied in a wide variety of fields. Implicit in FCA is the notion of a Galois connection, which apparently was first given by Birkhoff (1940). What can be added to FCA is a more structured formulation, including a categorical presentation, which opens up how FCA is related to interchange systems and their associated interchange spaces and interchange continuous mappings. Recall that under the addition of certain structure, an interchange system can becomes a topological system or a measurable system and interchange continuity respectively becomes traditional continuity or measurability of mappings. This work adds to the utility of systems, which are already linked to topology, foundations of mathematics, programming semantics, and other areas. The level of the talk will be quite elementary. In a later talk, we explore the relationships of FCA to lattice-valued set theory and lattice-valued topology.