

*The Annual Seminar on*

*Mathematical Logic and its Application, December 18 and 19, 2013*

*Shahid Beheshti University with the cooperation of the School of Mathematics, IPM, Tehran*

## **Algebras and Topologies Contrasting two Views of Semantics**

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A standard approach to semantics in different areas of Logic is to use categories that are algebraic in nature. Letting the scope of the term "Algebra" be somewhat liberal this even applies to classical model theory. It has been long known that in contrast to an algebraic approach one can study the semantics and/or the relationship between different models for different logics via categories that are topological in nature. Again, we are using the term "topological" rather liberally. In this talk we give a series of examples from different areas of logic where the study of semantics has taken two different complementing courses. Stone duality between category of Compact, Hausdorff, Totally Disconnected space and that of Boolean Algebras is then demonstrated to make a natural link between the two approaches. In recent years dualities akin to Stone duality have been used by Logicians to give new insights to existing research and to approach some problems anew. Our aim is to give an accessible introduction to the machinery that makes the link between Algebraic and Topological perspectives. As such the talk should be accessible to all graduate students and advanced undergraduates.