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*Model Theory and Exponentiation*

In the 90s model theoretic methods were used by Wilkie to show that sets defined in the real field with exponentiation have many of the good geometric and topological properties of real algebraic varieties. For example, any such set has only finitely many connected components. Complex exponentiation has a very different flavor. The definability of the integers leads to pathologies, but there is still some hope for a reasonable theory of definable sets. In this lecture I will review some of the older work on the real field and discuss Zilber's program for understanding complex exponentiation.