

# MARKOV BASES IN ALGEBRAIC STATISTICS

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**Abstract:** Algebraic statistics is a relatively new field that has developed and changed rather rapidly over the last twenty years. Markov basis, which represents a connection between commutative algebra and statistics, is of key importance to exact test of a contingency table. In this presentation, first, the basics of contingency tables, exact tests and Metropolis-Hastings algorithm are reviewed. The correctness of this algorithm is guaranteed by the theory of stationary distributions of Markov chains. Secondly, the notion of a Markov basis is introduced, and then the problem of computing Markov bases is addressed using tools in algebraic geometry. Next, some recent results in this field are presented, which involves part of our work. Finally, summary and future research problems are listed.