Markov bases for decomposable graphical models

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We show that primitive data swaps or moves are the only moves that have to be included in a Markov basis that links all the contingency tables having a set of fixed marginals when this set of marginals induces a decomposable independence graph. We give formulae that fully identify such Markov bases and show how to use these formulae to dynamically generate random moves.

Keywords: contingency tables; decomposable graphs; disclosure limitation; Gröbner bases; Markov bases; Markov chain Monte Carlo