

A primal-dual simplex algorithm to enumerate the mixed cells of a polynomial system

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When the polyhedral homotopy continuation method is used to locate all isolated zeros of a polynomial system, the process of enumerating all the mixed cells plays a critical role: it provides starting points for the solution paths and governs the efficiency of the continuation method. When locating mixed cells, one must deal with a large number of linear programming problems. Rather than the more popular interior point method, the simplex method is used for those LP problems because its underlying pivoting structure provides indispensable information in the process. An efficient primal-dual algorithm to enumerate all the mixed cells will be presented.

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