

Dynamic enumeration of all mixed cells for polyhedral homotopies

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The polyhedral homotopy proposed by Huber and Sturmfels has been known as a powerful and reliable numerical method for computing all isolated zeros of a polynomial system in complex variables. Mixed cells in certain polyhedral subdivisions play a crucial role when a family of homotopy functions is constructed. Li and Li showed that all mixed cells are described as linear equality and inequality systems whose solutions can be computed by linear programs.

In this talk, we present an efficient algorithm for enumeration of all mixed cells based on Li-Li method, and show by numerical results that our algorithm works efficiently for large-scale polynomial systems by comparison with existing methods.