Geometry Seminar
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Room 1013, Courant Institute
251 Mercer Street, New York

Hilbert polytopes and universal Grobner bases

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Abstract

We provide a unified construction of the state polyhedron of any zero-dimensional ideal using a suitable basis polytope associated with each such ideal. We introduce, for every d and n, the *Hilbert polytope* $\mathcal{H}_n^d$ and show that it refines the state polyhedron of any member of the Hilbert scheme H_n^d of n-long d-variate ideals. Using the Hilbert polytope and basis polytopes we device an efficient polynomial time algorithm, for any fixed d, for constructing the state polyhedron and the universal Grobner basis of any ideal of the Hilbert scheme H_n^d.

For further information contact Janos Pach at pachcims.nyu.edu, or visit our website: http://www.math.nyu.edu/seminars/geometry_seminar.html