

THE WONDERFUL GEOMETRY OF THE VANDERMONDE MAP

Cordian Riener

UiT The Arctic University of Norway, Norway

cordian.riener@uit.no

The Vandermonde map is the polynomial map given by the power-sum polynomials. We study the geometry of the image of the nonnegative orthant under this map and focus on the limit as the number of variables approaches infinity. We will show, the geometry of this limit is the key to new undecidability results in nonnegativity of symmetric polynomials and deciding validity of trace inequalities in linear algebra.

Joint work with Jose Acevedo (Georgia Institute of Technology, USA), Grigoriy Blekherman (Georgia Institute of Technology, USA) and Sebastian Debus (Otto-von-Guericke-University Magdeburg, Germany).