Tropical Discriminants

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We use tropical geometry to take a fresh look at the theory of A-discriminants of Gelfand, Kapranov and Zelevinsky. We show that the tropical A-discriminant is the Minkowski sum of the row space of A and the Bergman fan of the kernel of A. Moreover, the tropical A-discriminant allows for an interpretation as a certain set of regular polyhedral subdivisions of A.

We obtain a positive formula for the extreme monomials of any A-discriminant, and we give a combinatorial characterization of Δ-equivalence for regular triangulations of A.

This is a report on an ongoing project with Alicia Dickenstein and Bernd Sturmfels.