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**Linear algebra, combinatorics and defectivity**

In joint work with E. Cattani, we explore four approaches to the question of defectivity for a complex projective toric variety associated with an integral configuration  $A$ . The first one arises from the explicit tropicalization of the associated dual variety given with E.M. Feichtner and B. Sturmfels. The second one is based on the notion of iterated circuits introduced by A. Esterov. The third one uses an invariant defined by R. Curran and E. Cattani in terms of a Gale dual configuration of  $A$ . The fourth one was proposed by K. Furukawa and A. Ito in terms of Cayley decompositions of  $A$ .

We obtain formulae for the dual defect in terms of iterated circuits and Gale duals. Our proofs and extended definitions are linear-algebraic in nature and hold for finite configurations over an arbitrary field of characteristic zero. We prove in this generality the equivalence of the first three approaches. We give a Gale dual interpretation of Cayley decompositions and apply it to the study of defective configurations. However, we only prove one inequality between the first three invariants and the fourth one. I will close my talk with an open question concerning the reverse inequality.