

# Combinatorial Nullstellensatz and Applications

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'Nullstellensatz' is a German word that translates to 'theorem on the location of the zeros' (Null=Zero + stellen=Location + satz=theorem). In the 90's Noga Alon developed a technique which is a combinatorial analogue of Hilbert's celebrated Nullstellensatz. Not surprisingly, this theorem talks about the location of zeroes of polynomials over an arbitrary field. As simple corollaries of this single result, Alon was able to derive several well known theorems giving most of them one or two line proofs. In this lecture, we give a short proof of this technique called Combinatorial Nullstellensatz and present several applications of it.