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Title: Some extensions of Alon's Nullstellensatz

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Alon's combinatorial Nullstellensatz and in particular the resulting nonvanishing criterion is one of the most powerful algebraic tools in combinatorics, with many important applications. The nonvanishing theorem has been extended in two directions. The first and the third named authors proved a version allowing multiple points. Michałek established a variant which is valid over arbitrary commutative rings, not merely over subrings of fields. In this paper we give new proofs of the latter two results and provide a common generalization of them. As an application, we prove extensions of the theorem of Alon and Füredi on hyperplane coverings of discrete cubes.

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