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Kalina Mincheva* (mincheva@math.jhu.edu), Johns Hopkins University, 3400 N Charles Street, Baltimore, MD 21218. *Nullstellensatz for tropical polynomials.*

We improve on a result of A. Bertram and R. Easton which can be regarded as a Nullstellensatz for tropical polynomials. In order to do that we give a new definition of prime congruences in additively idempotent semiring using twisted products. This class turns out to exhibit some analogous properties to the prime ideals of commutative rings. In order to establish a good notion of radical congruences we show that the intersection of all primes of a semiring can be characterized by certain twisted power formulas. We give a complete description of prime congruences in the polynomial and Laurent polynomial semirings over the tropical semifield \mathbb{R}_{max} , the semifield \mathbb{Z}_{max} and the Boolean semifield \mathbb{B} . The minimal primes of these semirings correspond to monomial orderings, and their intersection is the congruence that identifies polynomials that have the same Newton polytope. We show that the radical of every finitely generated congruence in each of these cases is an intersection of prime congruences with quotients of Krull dimension 1. (Received September 22, 2015)