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Tropical schemes, tropical cycles, and valuated matroids. (English) Zbl 07174685

Summary: We show that the weights on a tropical variety can be recovered from the tropical scheme structure proposed in [GG16], so there is a well-defined Hilbert-Chow morphism from a tropical scheme to the underlying tropical cycle. For a subscheme of projective space given by a homogeneous ideal $I$ we show that the Giansiracusa tropical scheme structure contains the same information as the set of valuated matroids of the vector spaces $I_d$ for $d \geq 0$. We also give a combinatorial criterion to determine whether a given relation is in the congruence defining the tropical scheme structure.

MSC:
14T05 Tropical geometry (MSC2010)
05B35 Combinatorial aspects of matroids and geometric lattices

Keywords:
tropical scheme; valuated matroid

Software:
Binomials.m2; TropLi

Full Text: DOI

References:
[13] Speyer, D.

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