Title: Lifting problems in tropical geometry
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Abstract:

Tropical Geometry is a new area of mathematics which transforms questions about algebraic varieties to more combinatorial questions about polyhedral complexes by a process called tropicalization. The polyhedral complex reflects many of the properties of the original algebraic variety. We give an introduction to tropical geometry and then ask questions about which polyhedral complexes arise from algebraic varieties. We focus on the case of one-dimensional complexes in space and in tropical hypersurfaces, and we give necessary conditions for them to be tropicalizations. We also explain which lifting questions are likely to be combinatorial in nature.