

Tropical geometry of flag varieties and the space of phylogenetic trees

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Abstract

The space of phylogenetic trees is a polyhedral fan from mathematical biology which was constructed to study ancestral relationships between species. Recently I showed that this space appears as a sub-fan of the tropical varieties of each flag variety of the general linear group, and that the standard monomials in the coordinate rings of these varieties tropicalize to functions familiar to phylogenetics. I will explain how this construction works, and how it generalizes to the flag varieties of other reductive groups.

Keywords: polyhedral fan, tropical variety, flag variety, general linear group.