1078-14-401 **Christopher A Manon*** (chris.manon@math.berkeley.edu), 1205 Melville Square, 408, Richmond, CA 94804. *Phylogenetic trees and the tropical geometry of flag varieties.* Preliminary report.

We will discuss some recent theorems relating the space of weighted phylogenetic trees to the tropical geometry of flag varieties. We review some work of Speyer and Sturmfels, showing that the tropical variety $tr(I_{2,n})$ of the Grassmannian $Gr_2(\mathbb{C}^n)$ is homeomorphic to the space $\mathcal{T}^n$ of weighted phylogenetic trees on n leaves. This work was generalized by Iriarte-Giraldo and the author, who showed that the space $\mathcal{T}^n$ maps into the tropical variety of each Grassmannian variety $Gr_m(\mathbb{C}^n)$ via a collection of functions from the theory of phylogenetics called dissimilarity functions. We will explain how this proof works, and its connection to the combinatorial representation theory of the general linear group $GL_n(\mathbb{C})$. Then we show how to generalize this theorem to arbitrary type A flag varieties, where the role of the dissimilarity functions is played by the tropicalization of the standard monomials for type A. We close with some remarks on how to generalize this story to realize the crystal basis of a simply-connected simple group $G(\Gamma)$ associated to a Dynkin diagram Γ as functions on a combinatorial object called the Bergman fan $B(\Gamma)$, studied by Ardila, Reiner, and Williams. (Received December 13, 2011)