

1112-92-155

**Colby Long\*** (celong2@ncsu.edu) and **Seth Sullivant** (smsulli2@ncsu.edu). *Tying Up Loose Strands: Defining Equations of the Strand Symmetric Model.*

The strand symmetric model is a phylogenetic model designed to reflect the symmetry inherent in the double-stranded structure of DNA. We show that the set of known phylogenetic invariants for the general strand symmetric model of the three leaf claw tree entirely defines the ideal. This knowledge allows one to determine the vanishing ideal of the general strand symmetric model of any trivalent tree. Our proof of the main result is computational. We use the fact that the Zariski closure of the strand symmetric model is the secant variety of a toric variety to compute its dimension. We then show that the known equations generate a prime ideal of the correct dimension using elimination theory. (Received July 30, 2015)