Kevin Shu, Andrew Ortegaray, Robert C. Berwick and Matilde Marcolli* (matilde@caltech.edu). Phylogenetics of Indo-European Language families via an Algebro-Geometric Analysis of their Syntactic Structures.

Using Phylogenetic Algebraic Geometry, we analyze computationally the phylogenetic tree of subfamilies of the Indo-European language family, using data of syntactic structures. The two main sources of syntactic data are the SSWL database and Longobardi’s recent data of syntactic parameters. We compute phylogenetic invariants and likelihood functions for two sets of Germanic languages, a set of Romance languages, a set of Slavic languages and a set of early Indo-European languages, and we compare the results with what is known through historical linguistics. (Received January 05, 2019)