Shahrzad Jamshidi* (jamshidi@math.psu.edu), Penn State University Mathematics Dept., McAllister 419, University Park, PA 16801, and Jason Morton (morton@math.psu.edu), Penn State University Mathematics Dept., McAllister 219B, University Park, PA 16801. Algebraic geometry of tree tensor network states.

Tree tensor networks have been used to model the ground states of Hamiltonians in condensed matter physics and quantum chemistry. Exactly which quantum states can be represented by a tree tensor network with a given topology and given restrictions on the parameter tensors? When the restrictions are algebraic, the set of states is a projective algebraic variety. We describe those varieties, using techniques originally developed for phylogenetics. (Received August 28, 2014)