Pfaffian circuits are a new, geometrically motivated, and simplified construction of Valiant’s holographic algorithms. Enabling efficient computation of certain partition functions, these algorithms exploit dual Spinor varieties to simulate some quantum computations classically, and provide a means to probe the classical-quantum boundary. Combinatorial problems addressed include planar NAE-SAT, lattice path problems and evaluation of certain Tutte polynomials. Basis change is one route to superposition-like effects, and some of the geometric considerations in analyzing Pfaffian circuits under arbitrary basis change will be discussed. Connections are made to the sum-product algorithm, SLOCC equivalent entangled states, and monoidal categories.