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# Lower bounds for symmetric arithmetic circuits

In this talk I give an exposition of the methods that allow us to prove exponential lower bounds on the size of symmetric circuits for computing the permanent of a matrix. Here a circuit is symmetric if its shape is unchanged by row and column permutations of the matrix. This gives an exponential separation between symmetric circuits for computing the determinant and the permanent. I also explain how we can adapt the methods to varying symmetry groups and other polynomials. (based on joint work with Gregory Wilsenach)