Worst-Case to Average-Case Reductions via Additive Combinatorics

In this talk I will present a framework for designing worst-case to average-case reductions. Focusing on the problem of Matrix Multiplication, I will describe a transformation that takes any weak algorithm that is only correct on a small fraction of the inputs, and converts it into an algorithm that is correct on all inputs, while paying only a small overhead in running time. The talk is based on joint work with Vahid Asadi, Sasha Golovnev, Tom Gur, and Sathyawageeswar Subramanian.