
ALEKSANDR NIKOLOV, University of Toronto
Computing and Using Factorization Norms

A factorization norm of a matrix A is the value of an optimization problem over factorizations $A = BC$ with the objective to minimize the product of some matrix norms of B and C . Usually in this context we think of A as an operator between two non-Euclidean spaces, of B and C as factoring A through Euclidean space, and of the factorization norm as measuring how much the factoring distorts A . Factorization norms and the optimal factoring then allow solving non-Euclidean problems by mapping them to more easily solvable problems in Euclidean space. Originating in functional analysis, factorization norms have found many applications, e.g., to communication complexity, discrepancy theory, and private data analysis. In this talk I will discuss some of these applications, and also how to use tools from optimization to compute some factorization norms.