

Mathematical Colloquia

Monday, 22 October 2018

17:15 h, Lecture Room 119

Prof. Dr. Yaroslav Shitov, Higher School of Economics, Moscow

The nonnegative rank of a matrix: Hard problems, easy solutions

Abstract:

Let A be a matrix with nonnegative real entries. The nonnegative rank of A is the smallest k for which there exist k nonnegative rank-one matrices that sum to A . We present short, easy, and elementary solutions of two widely known problems on this topic, including the NP-hardness of the nonnegative rank (previously proved by Vavasis) and the problem of Cohen and Rothblum on rational nonnegative factorizations posed in 1993. A further development of our technique lead to the universality result on spaces of nonnegative factorizations.