

Uniqueness of nonnegative matrix factorizations by rigidity theory

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Let M be a matrix with nonnegative entries. Its nonnegative rank is the smallest natural number r such that M can be written as a sum of r rank one matrices whose entries are nonnegative. In this talk, we will discuss how uniqueness of nonnegative matrix factorizations can be studied via rigidity theory. We will define infinitesimally, locally and globally rigid nonnegative matrix factorizations. We will characterize infinitesimally rigid nonnegative factorizations using polyhedral geometry and establish a connection between infinitesimally and locally rigid nonnegative matrix factorizations. This talk is based on joint work with Robert Krone.