Nonnegative matrix rank and the EM algorithm

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We consider the mixture model of two discrete random variables, i.e. matrices of nonnegative rank at most r. The EM algorithm aims to maximize the log-likelihood function of the mixture model. In doing so, it approximates a matrix U with a matrix P of nonnegative rank at most r. We study a primary decomposition of the ideal of the EM fixed points and recognize the boundary components among its minimal primes.

This talk is based on joint work with Elina Robeva and Bernd Sturmfels.