



THE UNIVERSITY OF
CHICAGO

Computational and Applied Mathematics
&
Statistics Student Seminar

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Simons Lab
University of Chicago

Non-parametric identifiability of exponential mixtures

Friday, October 16, 2026
12:30 PM
Jones 303

ABSTRACT

Classical results on mixture identifiability establish uniqueness only within a restricted class of mixtures: those whose components come from a known parametric family, those with finitely many components, or those with linearly independent components. We show that for a broad class of exponential mixtures, no such restriction is needed: three conditionally i.i.d. observations per group identify the mixing law among all possible latent distributions. Moreover, we demonstrate that this is optimal. These further imply optimal finite-dimensional refinements of Schoenberg's Theorem and Freedman's Theorem.