

Mixtures of power series distributions: identifiability via uniqueness in problems of moments

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Abstract We treat the identifiability problem for mixtures involving power series distributions. Applying an idea of Sapatinas (Ann Inst Stat Math 47:447–459, 1995) we prove and elaborate that a mixture distribution is identifiable if a certain Stieltjes problem of moments has a unique solution while a non-uniqueness leads to a non-identifiable mixture. We describe explicitly models of identifiable mixtures and models of non-identifiable mixtures. Illustrative examples and comments on related questions are also given.

Keywords Power series distributions · Mixtures of distributions · Identifiability · Non-identifiability · Stieltjes problem of moments · Uniqueness · Non-uniqueness