

## Local mixtures of the exponential distribution

K. A. Anaya-Izquierdo · P. K. Marriott

Received: 6 June 2006 / Revised: 2 October 2006 /  
Published online: 13 January 2007  
© The Institute of Statistical Mathematics, Tokyo 2007

**Abstract** A new class of local mixture models called *local scale mixture models* is introduced. This class is particularly suitable for the analysis of mixtures of the exponential distribution. The affine structure revealed by specific asymptotic expansions is the motivation for the construction of these models. They are shown to have very nice statistical properties which are exploited to make inferences in a straightforward way. The effect on inference of a new type of boundaries, called *soft boundaries*, is analyzed. A simple simulation study shows the applicability of this type of models.

**Keywords** Mixture model · Local mixtures · Laplace expansion · Scale dispersion models · Affine geometry