Canonically correlated random measures and an application to survival analysis

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The study of the structure of probability distributions on R^d, with fixed margins, has a long history. An approach that stands out for its elegance is due to to Lancaster (1958) and relies on the use of orthogonal functions on the marginal distributions. This approach is extended here to define vector of canonically correlated gamma completely random measures (CRMs). It is shown that the canonical correlation sequences are moments of means of Dirichlet processes with random base measure and a related simulation algorithm is described. Finally, canonically correlated dependent gamma completely random measures (CRMS) are used to define dependent hazard rate functions for the analysis of partially exchangeable survival data.