TITLE:
Envelopes of posterior probabilities with multiple priors under finite additivity

ABSTRACT:
Applications in engineering, economics, medicine and social sciences can give rise to problems involving uncertainty, described by sets of incompatible and exhaustive events (or random variables) for which a complete probabilistic information (unique prior probability and likelihood) is not available. Moreover, the decision maker is often interested in more complex inferences than the usual posterior distributions. Significant examples are the statistical matching problem, the treatment of missing or misclassified data, the record linkage problem and the sensitivity analysis in robust Bayesian statistics. For such problems standard probabilistic and statistical methods cannot be applied. These situations naturally fit in de Finetti's theory of finitely additive coherent conditional probabilities in which generalized Bayesian procedures can be designed. The lack of uniqueness in the inference process is faced considering envelopes of coherent extensions. In this talk, we provide closed form expressions for the envelopes of coherent extensions arising in generalized Bayesian procedures, studying also a multiple-prior approach by means of a 2-monotone prior capacity. The characterizations of envelopes we provide are also used to derive a notion of conditioning for belief functions.