# A BAYESIAN APPROACH FOR QUANTILE AND RESPONSE PROBABILITY ESTIMATION WITH APPLICATIONS TO RELIABILITY

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**Abstract.**   In this paper we propose a Bayesian approach for the estimation of a potency curve which is assumed to be nondecreasing and concave or convex. This is done by assigning the Dirichlet as a prior distribution for transformations of some unknown parameters. We motivate our choice of the prior and investigate several aspects of the problem, including the numerical implementation of the suggested scheme. An approach for estimating the quantiles is also given. By casting the problem in a more general context, we argue that distributions which are IHR or IHRA can also be estimated via the suggested procedure. A problem from a government laboratory serves as an example to illustrate the use of our procedure in a realistic scenario.