

CONSISTENCY OF STATISTICAL MODELS DESCRIBED BY FAMILIES
OF REVERSED SUBMARTINGALES

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Abstract: A large number of statistical models is described by a family of reversed submartingales converging to degenerated limits. The problem under consideration is to estimate the maximum points of the limit function. For this, various maximum functions are used and consequently different concepts of consistency are introduced. In this paper we introduce and investigate a general reversed submartingale framework for these models. Our approach relies upon the i.i.d. case [6]. We show that the best known sufficient conditions for consistency in this case remain valid for conditionally S -regular families of reversed submartingales introduced in [13], which are known to include all U -processes. Moreover, by using results on uniform convergence of families of reversed submartingales [15], we deduce new conditions for consistency. These conditions are expressed by means of Hardy's regular convergence [4], and are of a total boundedness in the mean type. In this way the problem of consistency is naturally connected with the infinitely dimensional (uniform) reversed submartingale convergence theorem. Applications to a stochastic maximization of families of random processes over time sets are also given.

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