Mathematical Problems in Reliabilty.

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The construction flexible and practically convenient mathematical models of real stochastic processes and the statistical analysis of them is the main object of the reliability theory. Generally speaking, these models depend on unknown parameter θ to be estimated, and our decisions are based on available data and some a prior information about the parametric set Θ which contains θ. For the most part it is impossible to treat surely this information as an assumption that object under consideration can be described as a given finite-parametric model. So we need to consider this assumption only as an approximation. On the other hand the available data depend on a parameter n that is called by "the size of observations". This parameter concern usually as something "tends to infinity", and often we devoid of content about what happens for a particular n. But for any particular n the accuracy of our approximation which is given by the limit theorem depends seriously on unknown parameter θ. Mathematical problems which arise from attempts to adapt these approximations to each other, will be considered in this talk.

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