RASTA - Non-random equivalent characterizations of sample boundedness

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At the heart of Stochastic Process Theory is a deep understanding of the properties of paths. Many basic questions can be asked here: are the trajectories finite, are they continuous with respect to some topology, what can be said about the modulus of continuity? A powerful strategy is to represent a specific path property with an appropriate computable quantity. For example, the sample boundedness is usually equivalent to the fact that the mean value of supremum over all sample paths is finite. This feature is random type because in its formulation it refers to a random structure and therefore is usually hard to determine Therefore, it is much better to find quantities that are not random, but still equivalently characterize certain path properties. The RASTA proposal should bring new discoveries in this field. It should be emphasized that in the light of the latest results on selectors, empirical processes or logarithmically concave random vectors such characterizations exist for some new classes of processes, although so far they are quite complicated. In the RASTA proposal, it is expected to find nice - hopefully geometric type - equivalent characterizations of sample boundeness for certain classes of stochastic processes for which such a result has not yet been discovered.