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Approximability in iterative systems of finite random variables

We consider iterative systems of finite random variables, i.e. the sets of random variables that result from applying discrete functions from a certain class to a set of mutually independent initially given random variables. For various iterative systems we study the approximability of random variables: the possibility of generating within the iterated system random variables that approximate a given random variable in distribution.

The algebraic operations on independent random variables induce polylinear maps on the set of random variables distributions (the distribution simplex). Solving approximability problems turns out to be closely connected with properties of these maps, while classes of approximable distributions constructions are often based on convex sets of distributions.

For iterative systems we establish the conditions of approximation completeness (the possibility of approximating in distribution arbitrary random variables with a given set of values), the conditions of limit point uniqueness (i.e. the iterative system is subject to a certain probability limit law) and we construct closed classes of distributions for iterative systems generated by clones of Boolean functions, operations of finite rings and fields and operations of finite chains.

SCIENTIFIC SEMINAR
"DIFFERENTIAL GEOMETRY AND APPLICATIONS"

headed by Academician of RAS Anatoly T. Fomenko

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