Algebra in Statistics and Statistics in Algebra

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During talk we will address several important interplays between algebra and statistics. To illustrate algebra in statistics, we will discuss Testing Algebraic hypotheses (Drton et al. 2009), Algebraic-geometric foundations of statistical information (Amari 1987), algebraic structures in optimal design (Pistone et al. 2009) and regression (see Pázman 1993, Potocký and Stehlík 2010). We will also introduce problem of Category Theory in Statistical Learning. We also discuss topological-algebraical aspects of correlated fields (Stehlík, 2008).

To illustrate statistics in algebra, we will introduce relatively uniform convergence of weighted sums of random elements taking values in a σ-complete Banach lattice with the σ-property (see Potocký, 2002). We have several options for sampling from distributive lattices see e.g. Propp (1997). Thus several hypothesis may be constructed and empirical statistics evaluated.

The applications of the given structures will be presented.

References

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