

Remarks on optional sequences and the incomplete samples

Ivana Ilić¹

¹Department of Mathematics and Informatics, Faculty of Medical Sciences, University of Niš,
Bulevar Dr. Zorana Djindjića 81, 18000 Nis, Serbia, ivana@medfak.ni.ac.rs

For the given probability space (Ω, β, P) and the given sequence of reals $\{a_n\}_{n \in \mathbb{N}}$ the corresponding optional sequence is defined. The existence theorem is proved showing that if Ω is the infinite set and P is atomless, then there exists some decomposition of Ω into disjoint subsets $\mathcal{D}_{\mathcal{M}}$ such that $\cup \mathcal{D}_{\mathcal{M}} = \Omega$ and $P(\Gamma) < \epsilon$, for every $\Gamma \in \mathcal{D}_{\mathcal{M}}$ and every real number $\epsilon > 0$. Also, if the above decomposition is at most countable, it is proved that for every real number $\epsilon > 0$ there exists some optional sequence, such that the probability of appearance of any member of the sequence is less than ϵ . The missing data problem has also been perceived and related to the optional sequences. Some illustrative examples and properties of optional sequences of full measure are presented supporting the proofs.