

Sampling theorems

Invited lecture

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Dedicated to the

79th anniversary of the article V. A. Kotel'nikov. Ob propusknói sposobnosti "efira" i provoloki. *Materialy po radiosvyazi k 1-tomu Vsesoyuznomu s'ezdu po voprosam tehničeskoj rekonstrukcii svyazi.* Vsesoyuzni energetičeski komitet, Moskva, 1933, 1–19.

The aim of this talk is to present a survey of authors results (sometimes coauthored by Andriy Yakovich Olenko, † Predrag Mila Peruničić and Zurab Piranashvili) concerning the Whittaker–Kotel'nikov–Shannon (WKS) sampling; Whittaker–type sampling (colaboration with) and Yen–type sampling and its various extensions.

The goal is a systematic mathematical presentation of those extensions for both deterministic and stochastic, scalar and multivariate band–limited and non–band–limited signals and to give links to broad areas of approximations and applications.

MSC2010: 94A20, 60G10, 60G12, 26D15, 30D15, 41A05.

Keywords: Weak (Hinčin) sense stationary stochastic process, Homogeneous random field, Harmonizable process, Piranashvili process, Weak Cramér class random field, Bernstein function class, Paley–Wiener function class, Whittaker–Kotel'nikov–Shannon sampling, Whittaker sampling, Yen–type sampling, Average sampling, Equidistant (regular) sampling, Irregular sampling, Mean–square sampling restoration, Almost sure sampling restoration, Truncation error upper bounds, Extremals, Fréchet– (semi–) variation.

Section: 8, 10, 18.