The structure of the point spectrum in conflict dynamical systems

V. D.Koshmanenko[1]

[1]Institute of Mathematics, Kiev, Ukraine

koshman63@gmail.com

We discuss the emergence of the point spectrum in models of conflict dynamical systems which theory was developed in [1]. In particular, in [2] it was proven the emergence of pure point measures in limit states under the strategy of fixed priority. This strategy gives the necessary and sufficient condition.

Let us consider the trajectories of conflict dynamical system for a pair alternative opponents living on a common space $\Delta_0 = [1, 0]$ in terms of probability measures μ, ν. Assume $[1, 0]$ is subjected to infinite fractal division: $\Delta_0 = \bigcup_{i_1,...,i_k=1}^{n} \Delta_{i_i...i_k}, n \geq 2, \ k = 1, 2, ...$ Then, it is possible that at last one of the limit measure is pure point. According to [2] the limit measure μ_∞ is pure point if and only if there exists a unique fixed index $1 \leq i_0 \leq n$ such that at starting moment of time:

$$\mu^{t=0}(\Delta_{i_0}) > \nu^{t=0}(\Delta_{i_0}) \tag{1}$$

The further new result states the reaching of any value for amplitude of the point spectrum in a given local region under additional conditions on structure of starting divisions $\Delta_0 = \bigcup_{i=1}^{n} \Delta_{i_i}$.

1. Koshmanenko, V. Spectral Theory for Conflict Dynamical Systems. (in Ukrainian) Kyiv, Naukova dumka, 2016. 287 p.
2. Koshmanenko, V.D., Voloshyna V.O. The limiting distributions of conflict dynamical systems with point spectum, ISSN 1027-3190. Ukrainian Math. J., 2018, v. 70, No 2., 1615-1624.