

Makarova A.V., Gorlov V.A. (Voronezh, Russia) — **Stochastic differential inclusions with forward mean derivatives with special right-hand sides.**

An existence of solution theorem is obtained in \mathbb{R}^n for stochastic differential inclusions given in terms of the forward mean derivatives with right-hand sides are set-valued, lower semi-continuous and decomposable.

Theorem 1 ([1]) *Let the set-valued fields \mathbf{a} and $\boldsymbol{\alpha}$ on \mathbb{R}^n be lower semicontinuous and have closed decomposable images of points. Let also $\boldsymbol{\alpha}$ be positive definite and the following estimates hold:*

$$\|\text{tr}\boldsymbol{\alpha}(t, x)\| < K(1 + \|x\|)^2 \quad (1)$$

and

$$\|a(t, x)\| < K(1 + \|x\|) \quad (2)$$

for all $\alpha(t, x) \in \boldsymbol{\alpha}$, $a \in \mathbf{a}$ and for some $K > 0$.

Then for the initial condition $\xi(0) = \xi_0$ inclusion

$$\begin{cases} D\xi(t) \in \mathbf{a}(t, \xi(t)), \\ D_2\xi(t) \in \boldsymbol{\alpha}(t, \xi(t)). \end{cases} \quad (3)$$

has a solution well defined on the entire interval $t \in [0, T]$.

REFERENCES

1. *Makarova A.V.* Stochastic inclusions with forward mean derivatives having decomposable right - hand sides, Bulletin of the South Ural State University. Series Mathematical Modelling, Programming & Computer Software.- 2019.- Vol. 12.- No. 2. (in print)

This work was supported by the RFBR (project 18-01-00048).