

1157-60-221

**Erkan Nane\*** (ezn0001@auburn.edu), 221 Parker Hall, Auburn, AL 36849. *Blow-up results for space-time fractional Dynamics.*

Consider non-linear time-fractional stochastic reaction-diffusion equations of the following type,

$$\partial_t^\beta u_t(x) = -\phi(-\Delta)u_t(x) + I_t^{1-\beta}[b(u) + \sigma(u) \dot{F}(t, x)]$$

in  $(d+1)$  dimensions, where  $\beta \in (0, 1)$ , and the operator  $\partial_t^\beta$  is the Caputo fractional derivative while  $\phi : (0, \infty) \rightarrow (0, \infty)$  is a Bernstein function, and  $I_t^{1-\beta}$  is the Riesz fractional integral operator. The forcing noise denoted by  $\dot{F}(t, x)$  is a Gaussian noise. These equations might be used as a model for materials with random thermal memory. We derive non-existence (blow-up) of global random field solutions under some additional conditions, most notably on  $b$ ,  $\sigma$  and the initial condition.

These results are our recent joint work with Sunday Asogwa, Chansong Deng, Mohammud Foondun, Wei Liu, and Jebessa Mijena. (Received January 29, 2020)