1133-60-360 **Jebessa B Mijena*** (jebessa.mijena@gcsu.edu), 231 W Hancock St., CBX 017, Milledgeville, GA 31061, and **Erkan Nane**. *Space-time fractional stochastic partial differential equations.*

We consider non-linear time-fractional stochastic heat type equation

$$\partial_t^\beta u_t(x) = -\nu(-\Delta)^{\alpha/2} u_t(x) + I_t^{1-\beta}[\sigma(u)\, \dot{W}\,(t,x)]$$

in $(d+1)$ dimensions, where $\nu > 0, \beta \in (0,1)$, $\alpha \in (0,2]$ and $d < \min\{2, \beta^{-1}\}\alpha$, ∂_t^β is the Caputo fractional derivative, $-(-\Delta)^{\alpha/2}$ is the generator of an isotropic stable process, $I_t^{1-\beta}$ is the fractional integral operator, $\dot{W}\,(t,x)$ is space-time white noise, and $\sigma : \mathbb{R} \to \mathbb{R}$ is Lipschitz continuous. Time fractional stochastic heat type equations might be used to model phenomenon with random effects with thermal memory. We prove existence and uniqueness of mild solutions to this equation and establish conditions under which the solution is continuous. In sharp contrast to the stochastic partial differential equations studied earlier by Foondun and Khoshnevisan and by Walsh, in some cases our results give existence of random field solutions in spatial dimensions $d = 1, 2, 3$. Under faster than linear growth of σ, we show that time fractional stochastic partial differential equation has no finite energy solution. (Received August 01, 2017)