1167-35-187 **Isanka Garli Hevage*** (isankaupul.garlihevage@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042, and **Akif Ibraguimov** (akif.ibraguimov@ttu.edu). *The finite speed of propagation in degenerate Einstein Brownian Motion model.*

We considered the generalization of Einstein's model of Brownian motion when the key parameter of the time interval of free jumps degenerates. This phenomenon manifests in two scenarios: a) flow of the fluid, which is highly dispersing like a non-dense gas and b) flow of fluid far away from the source of flow, when the velocity of the flow is incomparably smaller than the gradient of the pressure. First, we will show that both types of flows can be modeled using the Einstein paradigm. We will investigate the question: what features will particle flow exhibit if the time interval of the free jump is inverse proportional to the density of the fluid and its gradient. We will show that in this scenario, the flow exhibits localization property, namely: if at some moment of time t_0 in the region gradient of the pressure or pressure itself is equal to zero, then for some time T during t interval $[t_0, t_0 + T]$ there is no flow in the region. This directly links to Barenblatt's finite speed of propagation property for the degenerate equation. The method of the proof is very different from Barenblatt's method and based on the application of Ladyzhenskaya - De Giorgi iterative scheme and Vespri - Tedeev technique. (Received March 06, 2021)