

Romarc Kana Nguedia

Friedrich Schiller University Jena, Germany

**On the Cauchy problem for a fractional nonlinear heat equation
with initial data in Morrey-smoothness spaces**

In this talk, we consider the Cauchy problem

$$\begin{aligned}\partial_t u(x, t) + (-\Delta_x)^\alpha u(x, t) &= Du^2(x, t), & x \in \mathbb{R}^n, 0 < t < T, \\ u(x, 0) &= u_0(x), & x \in \mathbb{R}^n\end{aligned}$$

for a fractional power dissipative nonlinear equation. Here, $Du^2(x, t) = \sum_{i=1}^n \partial_i u^2(x, t)$ denotes the nonlinearity and $(-\Delta_x)^\alpha$, $\alpha > \frac{1}{2}$, stands for the fractional Laplacian. We are concerned with the existence and uniqueness of mild and strong solutions of the above problem for given initial data u_0 belonging to Morrey-smoothness spaces.