## On some stochastic differential equations and fractional Brownian motion

KHAIRIA EL-SAID ABD EL-FATTAH EL-NADI Alexandria University, Egypt

Let  $\{B_t^H, t \in [0, 1]\}$  be a fractional Brownian motion with Hurst parameter H. In this paper, we proved the existence and uniqueness of strong solution for a stochastic partial differential equation of the following type

$$u(x,t) = u_o(x) + B_t^H + \int_0^t \sum_{|q| \le 2m} a_q(x) D^q u(x,s) ds + \int_0^t f(x,t,s,u(x,s)) ds,$$

where  $D^q = D_1^{q_1} \dots D_n^{q_n}$ , and  $D_j = \frac{\partial}{\partial x_j}$  and  $|q| = q_1 + q_2 + \dots + q_n$ ,  $q = (q_1, q_2, \dots, q_n)$  is an n-dimensional multi-index. It is assumed that the operator  $\frac{\partial}{\partial t} - \sum_{|q|=2m} a_q(x)D^q$  is uniformly parabolic.