1147-35-652 **Jingna Li*** (jingna8005@hotmail.com), 601# Huangpu West Avenue, Tianhe District, Guangzhou, Guangdong 510632, Peoples Rep of China, and **Hao Tang** and **Hongxia Liu**.

Stochastic MHD with fractional kinematic dissipation and partial magnetic diffusion in $\mathbb{R}^2$.

This talk focuses on a system of the 2D stochastic MHD equations with the fractional kinematic dissipation and the degenerate magnetic diffusion. We first establishing the local existence and uniqueness of the pathwise solution for general noise on the whole space, which is a non-trivial extension of the prevailing bounded domain case in many previous works. Then we show that when the noise is linear and the initial data is sufficiently smooth, the system with any derivative index less than 1 always possesses a unique global smooth solution, by fully exploiting the special structure of the equations. We also study the large-time decay rates of the solution for the linear noise case, and estimate the associated probability. (Received January 27, 2019)