Title: Approximation of stochastic differential equations with irregular drifts

Abstract: In this talk we will consider stochastic differential equations with bounded measurable drifts. We will see that if the noise is non-degenerate, then the rate of convergence for the Euler scheme is $1/2$. Further, we will see that if the equation is driven by additive noise, then the rate improves to $(1+\alpha)/2$, provided that the drift possesses regularity of order $\alpha \in (0,1)$ in a Sobolev scale. We will also derive a central limit theorem for the error. The limit is characterised by a hybrid Young-Itô equation. This is joint work with Máté Gerencsér and Khoa Lê.