Abstract: "A weak law of large numbers for a limit order book model with fully state dependent order dynamics"

In this talk we study a one-sided limit order book (LOB) model, in which the order dynamics depend on both, the current best bid price and the current volume density function. For the joint dynamics of the best bid price and the standing buy volume density we derive a weak law of large numbers, which states that the LOB model converges to a continuous-time limit when the size of an individual order as well as the tick size tend to zero and the order arrival rate tends to infinity. In the scaling limit the standing buy volume density follows a non-linear PDE coupled with a non-linear ODE that describes the best bid price.

The talk is based on joint work with U. Horst.