We consider a framework for solving optimal liquidation problems in limit order books. In particular, order arrivals are modeled as a point process whose intensity depends on the liquidation price. We set up a stochastic control problem in which the goal is to maximize the expected revenue from liquidating the entire position held. We solve this optimal liquidation problem for power-law and exponential-decay order book models and discuss several extensions. We also consider the continuous selling (or fluid) limit when the trading units are ever smaller and the intensity is ever larger. This limit provides an analytical approximation to the value function and the optimal solution. Using techniques from viscosity solutions we show that the discrete state problem and its optimal solution converge to the corresponding quantities in the continuous selling limit uniformly on compacts.

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