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Spanning of options and lattice theory

Ross (1976) has shown, in a finite-state framework, how options can complete financial markets. In this talk, we will study this problem in markets with infinitely many states and establish a connection with the theory of vector lattices. As a by-product of our results, we establish a generalization of the Kreps-Yan theorem and show that a pricing rule for vanilla options can be uniquely extended by arbitrage to a pricing rule on all derivative assets. This talk is based on joint work with Niushan Gao.