List of abstracts (to be updated)

1. Anna Battauz

   Title: The trilemma of American options with liquidation penalties

   Abstract: American equity options often incur substantial liquidation costs, as documented by Battalio, Figlewski, and Neal (2020) and Figlewski (2022), even when their underlying assets can be regarded as frictionless. This talk examines the implications of such liquidation frictions for the optimal exercise policies of American options from the perspective of an individual investor in an arbitrage-free, complete market. Optimal exercise policies are first characterized by comparing the cash flows associated with the available actions. The investor is assumed to face a three-way decision throughout the option's life: (i) exercise the option, (ii) sell it at a discounted price reflecting liquidation costs, or (iii) continue holding the option. The continuation value is initially evaluated by risk-adjusting and discounting future stochastic cash flows under the risk-neutral probability measure, consistent with the real options literature. The analysis is then extended to consider continuation values computed under the historical probability measure using a subjective discount rate. Ongoing research further enriches the framework by incorporating individual risk preferences through constant relative risk aversion (CRRA) utility (based on joint work with M. De Donno and Alessandro Sbuelz).

2. Sören Christensen

   Title: Nonparametric Learning for Optimal Stopping and Related Control Problems

   Abstract: Classical optimal stopping theory usually assumes that the dynamics of the underlying process are known. In many applications, however, these dynamics have to be learned from data. In this talk, we consider how a stopping rule can be learned from observations of an otherwise unknown diffusion. We also discuss related control problems that can be reduced to optimal stopping problems. The performance of the resulting strategies is measured in terms of regret, both for pure exploration and for sequential learning problems with an exploration–exploitation trade-off. The analysis uses methods from nonparametric estimation for stochastic processes. On the control side, an important role is played by margin conditions. These describe the behaviour of the value close to the stopping boundary and are closely related to smooth fit.

3. Alex Cox

   Title: Utility maximisation with model-independent constraints

   Joint work with Daniel Hernandez-Hernandez

   Abstract. We consider an agent who has access to a financial market, including derivative contracts, who looks to maximise her utility. Whilst the agent looks to maximise utility over one probability measure, or class of probability measures, she must also ensure that the mark-to-market value of her portfolio remains above a given threshold. When the mark-to-market value is based on a more pessimistic valuation method, such as model-independent bounds, we recover a novel optimisation problem for the agent where the agent's investment problem must satisfy a pathwise constraint.

   For complete markets, the expression of the optimal terminal wealth is given, using the max-plus decomposition for supermartingales. Moreover, for the Black-Scholes Merton model, when

the agent trades European Call options, the explicit form of the process involved in such decomposition is obtained, and we are able to express the agent's value of the problem in terms of the solution to an optimal stopping problem.

4. Erik Ekström

   Title: The optimal search problem

   Abstract: We study a search problem, where a 3-dimensional Brownian motion is given, with one drifting and two driftless coordinates. If the drifting coordinate is unknown, which coordinate should one observe in order to determine the drifting coordinate as quickly, and accurately, as possible?

5. Saul Jacka

   Title: The Support and Resistance Line Method: An Analysis via Optimal Stopping

   Abstract: We study a mathematical model motivated by the support/resistance line method in technical analysis where the underlying stock price transitions between three states of nature in a path-dependent manner. We use optimal stopping to compute optimal buy and sell times for the stock. The model includes partial reflection at certain price levels which introduces some interesting variations to the usual smooth-pasting assumptions.

6. John Moriarty

   Title: Iterated majorants: representations for multidimensional optimal stopping

   Abstract: We construct the least superharmonic majorant of a continuous function g on the d-dimensional unit ball ($d \geq 2$) by a canonical iteration of harmonic envelopes. This yields an explicit pointwise approximation scheme with no classical counterpart and provides a multidimensional analogue of the Dynkin–Yushkevich concave-envelope representation for the value function of an optimal stopping problem.

   Probabilistically, the iteration corresponds to successive compositions of stopping times and overcomes the localisation obstruction arising from the thinness of Brownian paths in dimensions $d \geq 2$. The representation is established under a Lipschitz regularity condition on the constructed majorant. Time permitting, we will show how Mobius transformations generate an infinite-dimensional family of explicit non-radial examples in the plane.

7. Jesper Lund Pedersen

   Title: Quickest detection with a discretely distributed unobservable change point

   Abstract: The classical quickest detection problem in continuous time concerns the detection of an unobservable change in the drift of an observed stochastic process. The objective is to detect the change as quickly as possible, subject to a constraint on the probability of false alarm.

   In this talk, the change point is assumed to have a discrete distribution. This gives rise to a class of optimal stopping problems with discontinuous gain functions. The effect of these discontinuities on the geometry of the stopping set is illustrated through some examples.

   The talk is based on joint work with Peter Johnson and Goran Peskir.

8. Goran Peskir

   Title: The Dubins constants for Walsh's spider process

   Abstract: A long-standing open problem of L. E. Dubins seeks to determine the maximal expected range of Walsh's spider process on n edges per root of the expected stopping time. The solution is known for n=1 (1988) and n=2 (2009). In this talk I will present the solution for n>=3.

9. David Saunders

   Title: Properties of the Solution of the Inverse Boundary Crossing Problem for Diffusions

Abstract: Let X_t be a one-dimensional diffusion process, and let q be a probability distribution on the positive real numbers. We consider the boundary b such that $q(t) = \mathbb{P}[\tau \leq t]$, where $\tau = \inf\{t > 0 : X_t \leq b(t)\}$. Properties including behaviour in small time and regularity will be discussed.