

# Book of Abstracts



**Ahmet Alkan** Sabancı University

## **Title: Equitable stable matchings under modular assessment**

Abstract: We propose a framework for addressing issues of equity and social welfare in the stable matching model. We first establish an equivalence between an ordinal condition and modular optimization on the lattice of stable matchings. This equivalence charts out a domain where equity or welfare criteria separate over individuals and appear as weights in optimization. We call the ordinal condition convexity and the domain modular. Convexity requires stable “mixtures” of matchings in a solution to also be in the solution. We next propose a novel class of equitability criteria called equity undominance and characterize the modular stable matching rules that are equity undominated. Notably, the modular stable matching rules provide for clear testable implications and a wide range of specifications allowing efficient optimization

**Anna Bogomolnaia** University of Glasgow

## **Title: Teams formation: efficiency and approximate fairness**

Abstract: A set of  $kn$  indivisible items is to be allocated to  $n$  agents; each agent is to get exactly  $k$  items (one might think of managers choosing teams of equal size). We consider models with cardinal or ordinal preferences, and look for efficient and approximately fair allocations. We work with notions of approximate fairness based on exchange of single objects, rather than on the mainstream idea of adding/subtracting objects. Our notions continue to operate within the meaningful domain of  $k$ -size bundles (“teams”) and are insensitive to positive affine transformations of utilities, hence do not require a separate treatment of “goods,” “bads” and “mixed objects”. A famous Round Robin rule fares very well on all fairness accounts, but fails efficiency, while rules based on collective welfare maximisation (like Nash or Leximin) cannot guarantee fairness, except on some special sub domains (two agents, identical valuations, or binary utilities). For the model with ordinal input, using ordinal domination, we introduce notions of ordinal efficiency and approximate fairness, which prove to be compatible, and describe the sets of ordinally fair allocations. We also treat the case of lexicographic preferences.

**Biung-Ghi Ju** Seoul National University

## **Title: Arrowian Social Choice and Decentralizability: An Integrated Approach**

Abstract: Integrating aggregation problems (Arrowian social choice, classification, group identification, etc.) and allocation problems (social choice with transferable utilities, claims adjudication, cost or surplus sharing etc.) in a unified model, we establish the equivalence of independence of irrelevant alternatives (Arrow 1951), non-manipulability by reallocation (reallocation-proofness), and decentralizability. We provide a full characterization of collective decision rules satisfying any of the three equivalent axioms: they are represented as the sum of two components, the first is a default decision and the second is the weighted average of additive decisions in some key variables of the model. The representation theorem is used to derive several central results in the two strands of literature and to establish new findings, in particular, in group identification and classification problems.

**Burhaneddin Sandıkçı** Istanbul Technical University

## **Title: Organ wastage in deceased donor organ transplantation**

Abstract: Organ transplantation is life-saving, but demand for organs far exceeds the supply. Despite efforts to increase the supply of donated organs for transplantation, organ shortages persist. In this talk, we focus on the problem of organ wastage in deceased donor organ transplantation systems, which suffer tremendously from the efficiency-equity tradeoff. We argue that self-interested individuals set their utilization levels more conservatively in equilibrium than the socially efficient level. To reduce the resulting gap, we offer an incentive mechanism that recompenses candidates returning to the waitlist for retransplantation, who have accepted a predefined set of organs, for giving up their position in the waitlist and show that it increases the equilibrium utilization of organs while also improving social welfare. Furthermore, the degree of improvement increases monotonically with the level of this nonmonetary compensation provided by the mechanism. We will also highlight our efforts to put this theory into practice via implementing the mentioned mechanism in the U.S. kidney transplantation system.

**Emin Karagözoğlu** Bilkent University**Title: Earned Entitlements and Risky Investments in Bargaining: An Experiment**

Abstract: We experimentally investigate risky investment decisions over jointly produced surplus, the impact of contributions to the surplus, risky investment decision, and outcome of investment decision on bargaining outcomes in an organizational setting with two agents. Agents' initial contributions to the bargaining surplus are determined in a real-effort task. Then, in three (between-subjects) treatments: an investment decision is taken by the computer, the low contributor, or the high contributor. Our results show that (i) the frequency of choosing the risky investment alternative is not affected by the agents' initial contributions, (ii) low contributors benefit from making the investment decision, and (iii) when low contributors make the investment decision, their shares of the bargaining surplus in agreements are affected from whether the risky investment turns out to be successful or not, whereas this is not true for high contributors when they make the decision. These observations point toward the possibility of asymmetric impact of decision authority and outcome bias in an organizational setting where parties bargain to share a jointly produced surplus.

**Hervé J. Moulin** University of Glasgow**Title: Minimising externalities ex ante and mechanism design**

Abstract: We revisit in the fair division context the fundamental normative trade-off between the liberal (Coasian) resolution of interpersonal externalities by decentralised person to person negotiations, apt to discover new unforeseen solutions and promote cooperation; and the regulated approach under the rule of a centrally designed mechanism, completely eliminating unscripted interactions - the Nash program -.

At the ex ante stage where the other agents' characteristics are unknown, the difference in welfare between my worst and best cases scenarios is the extent of interpersonal externalities I can be subject to. As a solution of the normative trade-off above we submit that the role of the mechanism designer should be limited to the minimisation of this gap. Maximising the worst case welfare, discussed first in mathematical cake-cutting stories more than 75 years ago is probably the simplest and most versatile normative principle in fair division. Minimising the best case welfare is an equally legitimate concern. It is not spiteful when the eventual outcome is efficient: allowing you higher potential gains ex ante must reduce those of some other agent(s). In most fair division problems, the designer can choose from a menu of maximal lower guarantees (my worst case welfare as a function of my characteristics) and/or minimal upper guarantees. Discovering these menus is a hard mathematical question, even in many simple instances. We do it in two iconic examples: the commons problem with homogenous inputs and outputs, and the allocation of indivisible goods (or bads) with transfers. Three results confirm the prominence of some familiar division rules and discover new ones.

**İpek Özkal Sanver** Istanbul Bilgi University**Title: A note on roommate problems with a limited number of rooms**

Abstract: Classical roommate problems define individual rationality by conceiving remaining single as the "outside option". This conception implicitly assumes that there are always some empty rooms to be shared. However, there are many instances when this is not the case. We introduce roommate problems with a limited number of rooms, where the "outside option" is "having no room". In this general framework, we show that the core equals the set of Pareto optimal and stable matchings.

**Jens Leth Hougaard** University of Copenhagen**Title: Successive Incentives**

Abstract: We study the design of optimal incentives in sequential processes. To do so, we consider a basic and fundamental model in which agents invest resources in extending a dynamic process. There exists a common success rate, which is increasing in the investment, but also bounded above. Realized agents generate value to the process. Reward sharing rules specify how the generated value is distributed for any realization of the process, and thus induce a game among agents where investments are chosen strategically. We characterize optimal reward rules that either yield the highest possible overall expected value of the process, or the highest possible expected payoff for the initiator of the process. We further investigate a couple of applications.

**Juan D. Moreno-Ternero** Universidad Pablo de Olavide

**Title: Revenue sharing at music streaming platforms**

Abstract: We study the problem of sharing the revenues raised from subscriptions to music streaming platforms among content providers. We provide direct, axiomatic and game-theoretical foundations for two focal (and somewhat polar) methods widely used in practice: pro-rata and user-centric. The former rewards artists proportionally to their number of total streams. With the latter, each user's subscription fee is proportionally divided among the artists streamed by that user. We also provide foundations for a family of methods compromising among the previous two.

**Kemal Yıldız** Bilkent University

**Title: Foundations of self-progressive choice models**

Abstract: Consider a population of heterogenous agents whose choice behaviors are partially comparable according to given primitive orderings. The set of choice functions admissible in the population specifies a choice model. A choice model is self-progressive if each aggregate choice behavior consistent with the model is uniquely representable as a probability distribution over admissible choice functions that are comparable. We establish an equivalence between self-progressive choice models and well-known algebraic structures called lattices. This equivalence provides for a precise recipe to restrict or extend any choice model for unique orderly representation. To prove out, we characterize the minimal self-progressive extension of rational choice functions, which offers an explanation for why agents might exhibit choice overload. We provide necessary and sufficient conditions for the identification of a (unique) primitive ordering that renders our choice overload representation to a choice mode

**M. Remzi Sanver** Université Paris Dauphine - PSL

**Title: Axiomatization of plurality refinements**

Abstract: Plurality rule uniquely satisfies anonymity, monotonicity, neutrality, and tops-onlyness. However, it is not always able to produce resolute outcomes. We study singleton-valued refinements of plurality rule that satisfy all but one of these four axioms. Monotonicity is preserved by all refinements of plurality, whereas no refinement satisfies the remaining three except for a very limited case. We explore what dropping one of the three remaining axioms brings about towards singleton-valued refinements.

**Mustafa Doğan** Istanbul Technical University

**Title: Designing Information to Screen**

Abstract: A welfare-maximizing planner needs to allocate two objects to two agents without using monetary transfers. The agents are initially uninformed and they learn about their preferences through a process dynamically controlled by the planner. The planner, by designing the flow of information, can shape the evolution of private information in a way that facilitates screening. I show that, it is indeed possible to implement the efficient allocation with probability arbitrarily close to 1 by devising a two-stage disclosure rule. The signal in the initial stage provides agents information about their preference intensities while concealing their preferred objects until the second stage. The initial signal exhibits "disassortative coupling" to ensure incentive compatibility. Arbitrarily large number of such signals establish efficiency in the limit.

**Özgün Ekici Özyeğin** University

**Title: A short proof of a characterization of the TTC rule**

Abstract: In the object reallocation problem, Ekici (2023) showed that Top Trading Cycle (TTC) is the unique rule that satisfies the properties of strategyproofness, individual rationality, and pair-efficiency. We provide a short proof of this characterization result.



**Özgür Kıbrıs Sabancı University****Title: Arbiter Assignment**

Abstract: In dispute resolution, arbitrator assignments are decentralized and also incorporate parties' preferences, in total contrast to referee assignments in sports. We suggest that there can be gains (i) in dispute resolution from centralizing the allocation by bundling the newly arriving cases, and (ii) in sports from incorporating teams' preferences. To that end, we introduce a class of Arbiter Assignment Problems where a set of matches (e.g., disputes or games), each made up of two agents, are to be assigned arbiters (e.g., arbitrators or referees). On this domain, the question of how agents in a match should compromise becomes critical. To evaluate the value of an arbiter for a match, we introduce the (Rawlsian) notion of depth, defined as the arbiter's worst position in the two agents' rankings. Depth optimal assignments minimize depth over matches, and they are Pareto optimal. We introduce and analyze depth optimal (and fair) mechanisms.

**Rajnish Kumar Queen's University Belfast****Title: The Expected Shapley value on a class of probabilistic games**

Abstract: We study a class of probabilistic cooperative games which can be treated as an extension of the classical cooperative games with transferable utilities. The coalitions have an exogenous probability of being realized. This probability distribution is known beforehand and the distribution of the expected worth needs to be done before the realization of the state. We obtain a value for this class of games and present three characterizations of this value using natural extensions of the axioms used in the seminal axiomatizations of the Shapley value. The value, which we call the Expected Shapley value, allocates the players their expected worth with respect to a probability distribution.

**Stefan Napel Universität Bayreuth****Title: Voting Success in Weighted Committees and Shareholder Meetings**

Abstract: Committee decisions on more than two alternatives can vary widely in the adopted voting procedure. This affects how closely collective choices reflect the preferences of a given committee member. We study how well the decisions produced by pairwise majority votes, plurality voting with or without a runoff, and the Borda scoring method track preference rankings of individual decision makers when the distribution of their voting weights is skewed. Corresponding indices of voting success allow to assess the individual a priori benefit of adopting one voting rule rather than another. We validate our theoretical results for weight distributions that reflect voting shares in corporations from the S&P 100 stock index. Plurality rule or the Borda method maximize a priori voting success for most shareholders.