

Joseph Root

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EMPLOYMENT

2021- Assistant Professor, Kenneth C. Griffen Department of Economics, University of Chicago
2020-2021 Postdoctoral Researcher California Institute of Technology

EDUCATION:

	DEGREE	DATE	FIELD
UC Berkeley	Ph.D.	2020	Economics
UC Berkeley	M.A.	2020	Mathematics
UC Berkeley	B.A.	2014	Applied Mathematics, Economics (Honors)

PAPERS:

- *Incentives and Efficiency in Constrained Allocation Mechanisms* (with David Ahn) [Job Market Paper]

We study private-good allocation mechanisms where an arbitrary constraint delimits the set of feasible joint allocations. This provides a unified perspective over several prominent examples that can be parameterized as constraints in this model, including house allocation, roommate assignment, and social choice. We first characterize the set of two-agent strategy-proof and Pareto efficient mechanisms for every possible constraint, showing that every mechanism is a "local dictatorship." For more than two agents, we leverage this result to provide a characterization of group strategy-proofness. In particular, an N-agent mechanism is group strategy-proof if and only if all its two-agent marginal mechanisms (defined by holding fixed all but two agents' preferences) are Pareto efficient and strategy-proof. We apply these results to the roommates problem to generate the novel finding that all group strategy-proof and Pareto efficient mechanisms are generalized serial dictatorships, a new class of mechanisms. Our results also yield a new proof of the Gibbard--Satterthwaite Theorem. Finally, we introduce and study a large class of "constraint-traversing" mechanisms which can be defined for any constraint and we provide a simple sufficient condition for such mechanisms to be group strategy-proof and Pareto efficient. We construct constraint-traversing mechanisms for a number of examples.

- *Stable Matching Under General Constraints*

This paper proposes a unified framework for studying two-sided matching problems with constraints. I introduce a matching algorithm called the constrained cumulative deferred acceptance algorithm capable of accommodating a wide variety of constraints. Like the deferred acceptance algorithm, one side of the market makes proposals to another. A "constraint correspondence" dynamically limits the choices of the receiving side in order to enforce that the ultimate match satisfies the constraint. If the constraint correspondence satisfies a "generalized substitutes" condition, the ultimate match will be constrained stable in the sense that satisfying any blocking pair would lead to a violation of the constraint. I provide two further conditions, "aggregate monotonicity" and "constraint IIA," on the constraint correspondence which ensure the constrained cumulative deferred acceptance algorithm implements a strategy-proof mechanism. Finally, I study the comparative statics of constraint correspondences.

FELLOWSHIPS AND AWARDS:

2021 Young Scholar Award, International Conference on Social Choice and Voting
2020 PIMCO Fellowship in Data Science
2019 Deans Normative Time Fellowship, UC Berkeley
2014 BEHL Fellowship, UC Berkeley
2012 Robert and Colleen Haas Scholar, UC Berkeley

INVITED TALKS

- 2021 SAET Conference, USC, University of Tokyo, Rochester
2020 UCLA, Penn State, Notre Dame, University of Michigan, University of Chicago, Bocconi, Princeton, UPenn, Caltech, PIMCO
2019 NSF/NBER Conference on Econometrics and Mathematical Economics, UC Berkeley

TEACHING

- 2021 Game Theory, The theory of Market Design

PROFESSIONAL SERVICE

Referee: American Economic Review, American Economic Review: Insights, Journal of Economic Theory, Theoretical Economics