

Topics in Microeconomic Theory

Sarah Auster

This course will cover recent research related to the topic of robust optimization. The main focus lies on the question of how to design mechanisms, contracts, and organizations whose performance does not hinge on the details of the environment. The list of papers is:

1. Carroll, Gabriel. "Robustness in mechanism design and contracting." *Annual Review of Economics* 11.1 (2019): 139-166.
2. Carroll, Gabriel. "Robustness and linear contracts." *American Economic Review* 105.2 (2015): 536-563.
3. Dai, Tianjiao, and Juuso Toikka. "Robust incentives for teams." *Econometrica* 90.4 (2022): 1583-1613.
4. Frankel, Alexander. "Aligned delegation." *American Economic Review* 104.1 (2014): 66-83.
5. Guo, Yingni, and Eran Shmaya. "Regret-Minimizing Project Choice." *Econometrica* 91.5 (2023): 1567-1593.
6. Guo, Yingni, and Eran Shmaya. "Robust monopoly regulation." *arXiv preprint arXiv:1910.04260* (2019).
7. Bergemann, Dirk, and Karl Schlag. "Pricing without priors." *Journal of the European Economic Association* 6.2-3 (2008): 560-569.
8. Bergemann, Dirk, and Karl Schlag. "Robust monopoly pricing." *Journal of Economic Theory* 146.6 (2011): 2527-2543.
9. Madarász, Kristóf, and Andrea Prat. "Sellers with misspecified models." *The Review of Economic Studies* 84.2 (2017): 790-815.
10. Carrasco, Vinicius, et al. "Optimal selling mechanisms under moment conditions." *Journal of Economic Theory* 177 (2018): 245-279.
11. Carroll, Gabriel. "Robustness and separation in multidimensional screening." *Econometrica* 85.2 (2017): 453-488.
12. Che, Yeon-Koo, and Weijie Zhong. "Robustly-optimal mechanism for selling multiple goods." *Proceedings of the 22nd ACM Conference on Economics and Computation*. 2021.
13. Libgober, J. and X. Mu (2021): "Informational Robustness in Intertemporal Pricing," *The Review of Economic Studies*, 88, 1224–1252.
14. Brooks, Benjamin, and Songzi Du. "Optimal auction design with common values: An informationally robust approach." *Econometrica* 89.3 (2021): 1313-1360.
15. Ball, Ian, and Deniz Kattwinkel. "Robust Robustness." *arXiv preprint arXiv:2408.16898* (2024).

Participants are required to actively participate in the course. Every week, a participant will present one of the papers. The other participants are expected to read the paper in advance and provide a short summary of what they view as the paper's contribution, main strengths, and potential weaknesses.

The grade for the course will be obtained from

- the presentation in class,
- the written summaries,
- a research proposal.

The presentation will provide an opportunity to practice the communication of research. The research proposal will allow students to explore a particular topic in more detail and obtain feedback on their ideas.