

Report on the Hausdorff Trimester Program
Mechanism Design and Related Topics
May - August 2009

Local Coordinator: Benny Moldovanu

The program hosted an array of activities during one intense summer. Many top researchers gathered in Bonn, some of them staying for longer periods of time. In addition, about 20 Ph.D. students and young postdocs also spent prolonged periods of time in Bonn. It is fair to say that the trimester program constituted the main international event in the area for a significant period of time.

Here is a list of the main conducted activities:

1. May 22-24, 2009: Workshop on "Incentives, Efficiency, and Redistribution in Public Economics" organized by M. Hellwig and F. Bierbrauer (Bonn) – joint event with the Max-Planck-Institute for Research on Collective Goods. This workshop focused on the applications of mechanism design to public economics, e.g., the provision of public goods, or optimal taxation.
2. June 7-9, 2009: General Interest Public Lecture, Research Lecture and Student Tutorials, held by Eric Maskin (IAS, Nobel Prize 2007). It is worth mentioning that the public lecture was attended by more than 500 people, many of them undergraduate students. The tutorials constituted a unique opportunity for graduate students to discuss research ideas at an early stage.
3. June 25-27, 2009: Workshop on "Information and Dynamic Mechanism Design", organized by D. Bergemann (Yale), S. Morris (Princeton), Y. Segal (Stanford), and J. Valimaki (Helsinki). A highlight of this conference was the Keynote Lecture delivered by Paul Milgrom (Stanford). Dynamic Mechanism Design is a rapidly developing area that blends Optimal Stopping/Dynamic Programming with Information and Incentive Economics in order to design optimal schemes for settings where agents and/or physical goods and information evolve over time.

4. July 16-18, 2009: Workshop on "Multidimensional Mechanism Design", organized by R. Müller (Maastricht), R. Vohra (Northwestern) and A. Sen (ISI). Multidimensional mechanism design is much more subtle than the single-dimensional, standard case because incentive compatibility cannot be usually reduced to a monotonicity condition. Instead, a complex integrability constraint needs to be added, resulting in non-standard variational problems.
5. July 20-31, 2009: Summer School on "Limited Cognition, Strategic Thinking and Learning in Games", held by V. Crawford (San-Diego) and P. Jehiel (UCL and PSE) – joint event with the Bonn Graduate School of Economics. There were about 100 applications, and the school was attended by 40 participants (advanced graduate students and young postdocs) from 9 countries. Besides lecture series by Crawford and Jehiel, the participants had also the opportunity to present their own work.
6. June-August, 2009: Participants' Lecture Series. In this series the long term participants presented their newest results.

We now very briefly review below a few new results that were obtained during the programme. Multidimensional mechanism design and robust implementation played a major role. Bergeman, Morris, and Tercieux (2010) continued their work on robust design, and introduced the novel concept of rationalizable implementation. Jehiel, Meyer-ter-Vehn, and Moldovanu (2010) showed that even a very weak, local version of robustness leads to generic impossibility in multidimensional settings with interdependent values. Carbahal, McLennan and Tourky (2010) revisited Roberts's characterization result for dominant strategy implementable mechanisms and corrected a flaw in previous formulations. Naeemi, Berger, and Müller (2010) generalized earlier characterizations of incentive compatibility to cover the case of convex or non-differentiable valuations. Mylovanov and Tröger (2010) attacked the difficult problem of mechanism design with an informed principal and showed that a solution always exists if the agents' payoff functions are independent of the principal's type.

Vohra (2011) constitutes a major new graduate text-book that offers a unified approach, via linear programming, to many central issues in mechanism design. Vohra's stay at HIM was crucial for the book's completion, and shall be acknowledged by the author.

Another main theme was dynamic mechanism design. Lauerman and Wolinsky (2010) and Moldovanu and Shi (2010) offer models that add incomplete information to search/optimal stopping models. Finally, several authors focused on applications. Erdil and Klemperer (2010) propose a new payment rule for core-selecting auctions. Core-selecting auctions are a novel development, intended for use in instances where general equilibrium prices may not exist (e.g, due to complementarities among objects). Olga Gorelkina (2010) designed a new collusion-free auction mechanism. It is of interest to note that Gorelkina, who was on the job market at the time, was hired in Martin Hellwig's MPI group.

- A. Erdil and P. Klemperer (2010): A New Payment Rule for Core-Selecting Package Auctions, discussion paper, Oxford University
- Juan Carlos Carbajal, Andrew Mclellan, Rabee Tourky (2010): Truthful Implementation and Aggregation in restricted Domains
- Olga Gorelkina (2010): Precluding Collusion in Auctions, discussion paper, IDEI Toulouse
- Philippe Jehiel, Moritz Meyer-ter-Vehn, Benny Moldovanu (2010): Locally Robust Implementation and its Limits, discussion paper, UCLA
- Stefan Lauermann and Asher Wolinsky (2010): Adverse Selection and Search, discussion paper, University of Michigan
- Benny Moldovanu and Xianwen Shi (2010): Search Committees, discussion paper, University of Bonn
- Dirk Bergemann, Stephen Morris, Olivier Tercieux (2010): Rationalizable Implementation, discussion paper, Princeton University
- Tymofiy Mylovanov, Thomas Tröger (2010): Informed principal problems in generalized private values environments, discussion paper, Penn State University
- Seyed Hossein Naeemi, André Berger, Rudolf Müller (2010): Characterizing Incentive Compatibility for Convex Valuations, discussion paper, University of Maastricht
- Rakesh Vohra (2011): Mechanism Design, Cambridge University Press, forthcoming