

The International Conference Game Theory and Applications GTA 2022

June 28–July 1, 2022
Saint Petersburg, Russia

Fully virtual

Organized by
Saint Petersburg State University
(Faculty of Applied Mathematics and Control Processes
and Graduate School of Management)

International Scientific Committee

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<https://gta2022.spbu.ru/en/>

Program

Saint Petersburg time (UTC+3)

Tuesday, June 28	
09:45–10:00	WELCOME ADDRESS
10:00–11:00	PLENARY TALK (1)
11:15–12:30	PARALLEL SESSIONS (1)
14:00–15:40	PARALLEL SESSIONS (2)
16:00–17:00	PLENARY TALK (2)
17:15–18:55	PARALLEL SESSIONS (3)
Wednesday, June 29	
10:00–11:00	PLENARY TALK (3)
11:15–12:30	PARALLEL SESSIONS (4)
14:00–15:40	PARALLEL SESSIONS (5)
16:00–17:00	PLENARY TALK (4)
17:15–18:30	PARALLEL SESSIONS (6)
Thursday, June 30	
10:00–11:00	PLENARY TALK (5)
11:15–12:30	PARALLEL SESSIONS (7)
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Friday, July 1	
10:00–11:00	PLENARY TALK (7)
11:15–12:30	PARALLEL SESSIONS (10)
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16:00–16:50	PARALLEL SESSIONS (12)
17:10–17:30	CLOSING SESSION

Tuesday, June 28

09:45–10:00 WELCOME ADDRESS

Chairs – Leon Petrosyan and Nikolay Zenkevich

10:00–11:00 PLENARY TALK (1)

Chair – Artem Sedakov

Eilon Solan, Tel Aviv University, Israel
“Identifying the deviator”

11:15–12:30 PARALLEL SESSIONS (1)

Cooperative Games on Graphs – 1

Chair – Dongshuang Hou

11:15–11:40 **José-Manuel Giménez-Gómez, Josep E. Peris and Begoña Subiza**

Nonempty core of minimum cost spanning tree games with revenues

11:40–12:05 **Liyang Kang, Anna Khmelnitskaya, Erfang Shan, Dolf Talman and Guang Zhang**

The average tree and the two-step average tree values for graph and hypergraph games

12:05–12:30 **Dongshuang Hou, Yifan Feng, Panfei Sun and Hao Sun**

Sharing the cost of polluted rivers: Bilateral compensation method

Mechanism Design

Chair – Endre Csóka

11:15–11:40 **Héctor Hermida Rivera**

The General Implementation Problem

11:40–12:05 **Tangren Feng, Axel Niemeyer and Qinggong Wu**

The Limits of Ex Post Implementation without Transfers

12:05–12:30 **Endre Csóka**

A Robust Efficient Dynamic Mechanism

14:00–15:40 PARALLEL SESSIONS (2)

Pursuit-Evasion Games

Chair – Mehdi Salimi

14:00–14:25 **Abdulla Azamov, Tulanboy Ibaydullayev and Azamat Holboyev**

On normal forms of pursuit-evasion dynamic games

14:25–14:50 **Xinmi Li**

How do Tom and Jerry Play? A Simple Application of Convex Geometry in Game Theory

14:50–15:15 **Vesna Iršič, Bojan Mohar and Alexandra Wesolek**

The game of cops and robber on geodesic spaces

15:15–15:40 **Mehdi Salimi**

On game value for the pursuit-evasion differential games

Market Games – 1

Chair – Stewart Ethier

14:00–14:25 **Ivan Belyaev and Igor Bykadorov**

Equilibrium in Dixit-Stiglitz-Krugman Model: The Case of Two Groups of Countries

14:25–14:50 **Igor Bykadorov**

Trade Model under the Monopolistic Competition of Producers with Investments in R&D

14:50–15:15 **Xinnian Pan**

Strategic Framing of Prices with Consumer Confusion

15:15–15:40 **Stewart Ethier**

Bertrand's analysis of baccarat

Bayesian Games

Chair – Marina Sandomirskaja

14:00–14:25 **Fan Wu and Jie Zheng**

Bidirectional Persuasion

14:25–14:50 **Zhonghong Kuang, Jaimie Lien and Jie Zheng**
Hierarchical Bayesian Persuasion

14:50–15:15 **Jiangjing Zhou, Ovanes Petrosian and Hongwei Gao**
Bayesian Updating in Dynamic Game Model

15:15–15:40 **Marina Sandomirskaia and Ruslan Shavshin**
Finite Markets with Consumer Private Valuations: Theory of Deficit

16:00–17:00 PLENARY TALK (2)
Chair – Leon Petrosyan

Tamer Basar, University of Illinois at Urbana-Champaign, USA
“Learning the Mean-Field Equilibrium with Multiple Populations”

17:15–18:55 PARALLEL SESSIONS (3)

Evolutionary Games – 1
Chair – Elena Gubar

17:15–17:40 **Edgar Sanchez Carrera, Germana Giombini and Giorgio Calcagnini**
Dynamic-greening strategies driven by banks and firms

17:40–18:05 **Ilyass Dahmouni and Elnaz Kanani Kuchesfehani**
Optimal Vaccine Roll-out Plan for Pandemic Control

18:05–18:30 **Sofia Correa**
Persistent Protests

18:30–18:55 **Vladislav Taynitskiy, Elena Gubar and Tatiana Vlasova**
Optimal control in a two-strain SIRS model over a scale-free network

Social Influence
Chair – Artem Sedakov

17:15–17:40 **Emily Tanimura**
Nuanced versus extremal expression of opinions in the presence of social influence

17:40–18:05 **Kamilla Timerbulatova**

Modeling the usage of social media as a signaling channel in the labor market

18:05–18:30 **Srinivas Arigapudi, Omer Edhan, Yuval Heller and Ziv Hellman**

Mentors and Recombinators: Multi-Dimensional Social Learning

18:30–18:55 **Yulia Kareeva, Artem Sedakov and Mengke Zhen**

Bargaining in social networks with stubborn agents

Machine Learning in Games

Chair – Clemens Possnig

17:15–17:40 **Xuan Zhou and Yicheng Gong**

Analysis of the causes and evolution of class solidification based on Q-learning and asymmetric repetitive eagle-pigeon game

17:40–18:05 **Qing Liu and Yicheng Gong**

Improved models of boxed pig game and simulation analysis based on Q-learning

18:05–18:30 **Gong Yicheng and Xu Yanli**

Analysis of the evolution and causes of educational involution based on game theory and reinforcement learning

18:30–18:55 **Clemens Possnig**

Deep Learning to Collude

Wednesday, June 29

10:00–11:00 PLENARY TALK (3)
Chair – Ovanes Petrosian

David W.K. Yeung, Hong Kong Shue Yan University, Hong Kong
“Durable-strategies Dynamic Games under Uncertainty”

11:15–12:30 PARALLEL SESSIONS (4)

Cooperative Games on Graphs – 2
Chair – Stefano Vannucci

11:15–11:40 **Yifan Feng, Dongshuang Hou, Hao Sun and Genjiu Xu**
Sharing rivers with line-tree structure: Minimal Responsibility Downstream Compensation method

11:40–12:05 **Stefano Vannucci**
Revealed VNM-Solutions: Characterizations

Evolutionary Games – 2
Chair – Elena Gubar

11:15–11:40 **George K Varghese, Lekshmi Ashok and Santosh G Thampi**
An evolutionary game theoretic approach for the resolution conflict arising from the adoption of a biodiversity conservation strategy

11:40–12:05 **Ruize Ma, Lin Jiang, Xuping Wang and Junhu Ruan**
Is the smallholder consciousness at work? IoT Based Ecommerce Adoption Intention in Farmers Based on Evolutionary Game Theory: Evidence from Shaanxi China

Experiments – 1
Chair – Zhijian Wang

11:15–11:40 **Xingyi Ruan**
How to Pick the Winner? A Laboratory Experiment on Promotion Mechanisms and Individual Performance

11:40–12:05 **Xin Shen**

Self-serving Regret: Experimental Evidence from a Reciprocity Game

12:05–12:30 **Zhijian Wang**

Eigen mode selection in human subject game experiment

14:00–15:40 PARALLEL SESSIONS (5)

Dynamic Games and Applications – 1

Chair – Denis Kuzyutin

14:00–14:25 **Vassily Kalachev, Guennady Ougolnitsky and Anatoly Usov**

Difference Stackelberg Game Theoretic Model of Innovations in Universities as Cournot Oligopoly

14:25–14:50 **Reinhard Neck and Engelbert Dockner**

Dynamic Games and Rational-Expectations Models of Macroeconomic Policies

14:50–15:15 **Leon Petrosyan, David Yeung, and Yaroslavna Pankratova**

Cooperative Network Games with Partner Sets

15:15–15:40 **Denis Kuzyutin, Julia V. Skorodumova and Nadezhda Smirnova**

On a cooperation scheme for multistage game with asymmetric players

Market Games – 2

Chair – Igor Konnov

14:00–14:25 **Konstantinos Papadopoulos**

On the Equivalence of Foreign Exchange Market Structures

14:25–14:50 **Igor Konnov**

General Market Equilibrium Problems under Local and Partial Information

14:50–15:15 **Xiaokuai Shao**

Warm up by Revelation to Cool down in Competition: Strategic Provision of Relationship-sensitive Information

16:00–17:00 PLENARY TALK (4)
Chair – Nikolay Zenkevich

Georges Zaccour, HEC Montreal, Canada
“Dynamic Pricing and Advertising in the Presence of Strategic Consumers and Social Contagion: A Mean-Field Game Approach”

17:15–18:30 PARALLEL SESSIONS (6)

Supply Chain Management
Chair – Elena Parilina

17:15–17:40 **Irina Berezinets, Nikolay Zenkevich and Natalia Nikolchenko**
Conditional coordination of buy-back contract under demand uncertainty

17:40–18:05 **Anastasiia Ivakina and Nikolay Zenkevich**
Stable goal-based management strategy for supply chain finance

18:05–18:30 **Fanjun Yao, Elena Parilina, Georges Zaccour and Hongwei Gao**
Accounting for Consumers’ Environmental Concern in Supply Chain Contracts

Market Games – 3
Chair – Zeng Lian

17:15–17:40 **Haipeng Han and Mingzhi Li**
Information Structure and Price Discrimination in Two-Sided Markets

17:40–18:05 **Weixing Ford**
Online-Offline Competition with Heterogeneous Consumers: An Example for No-Existence of Pure Strategy Nash Equilibrium

18:05–18:30 **Zeng Lian**
Duopoly Competition between Two-sided Platforms

Thursday, June 30

10:00–11:00 PLENARY TALK (5)

Chair – Elena Parilina

Abraham Neyman, Hebrew University of Jerusalem, Israel
“Robust optimization in stochastic games”

11:15–12:30 PARALLEL SESSIONS (7)

Games with Stochastic Payoffs

Chair – Dmitrii Lozovanu

11:15–11:40 **Pavel Konyukhovskiy and Elena Borisova**
Stochastic Cooperative Game Models in the Analysis of the Interaction of World Centers of Power

11:40–12:05 **Panfei Sun, Dongshuang Hou and Hao Sun**
Optimization Implementation of Solution Concepts for Cooperative Games with Stochastic Payoffs

12:05–12:30 **Dmitrii Lozovanu and Stefan Pickl**
Stationary Nash Equilibria for Average-Discounted Stochastic Positional Games

Multistage Games

Chair – Min Cheng

11:15–11:40 **Wenwen Qiao**
The time-consistency of optimality principles in multistage cooperative games: the case of multiple optimal trajectories

11:40–12:05 **Peichen Ye and Yin Li**
Truth-telling and Nash equilibrium in three-stage game with spanning arborescence

12:05–12:30 **Min Cheng**
Dynamic optimistic characteristic functions in multi-stage games with spanning trees

Cooperative Games and Applications

Chair – Zhigang Cao

11:15–11:40 **Valery Vasilev**

On polynomial core of TU cooperative game

11:40–12:05 **Anirban Mitra, Manu Gupta and Nandyala Hemachandra**

Cooperative Game Theoretic Models to Analyze Multi-class Queueing Systems

12:05–12:30 **Zhigang Cao**

Cooperative Functions

14:00–15:40 PARALLEL SESSIONS (8)

Group Formation

Chair – Elena Parilina

14:00–14:25 **Lu Dong, Lingbo Huang, Jaimie Lien and Jie Zheng**
How Alliances Form and Conflict Ensues

14:25–14:50 **Razika Sait, Abdelhakim Hammoudi and Mohammed Said Radjef**

The effect of firms' efficiency and membership rules on the endogenous formation of a stable common research lab

14:50–15:15 **Dmitry Levando**

Formation of coalition structures from non-cooperative actions of agents

15:15–15:40 **Ping Sun and Elena Parilina**

Dynamic network formation with ordered partitioning and incomplete information

Experiments – 2

Chair – Jianing Chen

14:00–14:25 **Jiaxun Dai**

Algorithm recommendation and price discrimination in a monopoly market: Evidence from the laboratory

14:25–14:50 **Yongchun Peng**
Cooperation and Defection in the Social Dilemma: A Laboratory Experiment based on Frame and Risk

14:50–15:15 **Alexander Usvitskiy and Dmitry Ryvkin**
Competition for market share with dynamic spillovers: An experiment

15:15–15:40 **Jianing Chen**
Self-serving Reward and Punishment: Evidence from the Laboratory

16:00–17:00 PLENARY TALK (6)
Chair – Alexander Vasin

Larry Samuelson, Yale University, USA
“Inverse Isotonicity for Equilibrium Problems”

17:15–18:30 PARALLEL SESSIONS (9)

Taxation and Corruption
Chair – Suriya Kumacheva

17:15–17:40 **Marta Biancardi, Giovanni Villani and Gianluca Iannucci**
Inter-temporal decisions, optimal taxation and non-compliant behaviors in groundwater management

17:40–18:05 **Vassili Kolokoltsov**
Inspection-corruption game of illegal logging and other violations: principle of quadratic fine

18:05–18:30 **Suriya Kumacheva and Galina Tomilina**
The Model of Interaction between Tax Authority and Taxpayers: Mutual Information Collection and Analysis

Game Theory and Applications – 1
Chair – Wenji Xu

17:15–17:40 **Yunwen He, Zihui Wang and Bin Xu**
Trust under Request versus Trust with Threat

17:40–18:05 **Nikolay Krasovskii and Alexander Tarasyev**
*Comparison of the Behavior for Trajectories of Replicator
Dynamics, Best Reply Dynamics and Guaranteed Strategies in
Dynamic Bimatrix Games*

18:05–18:30 **Wenji Xu and Shuoguang Yang**
*Selling with Product Recommendation and Efficient Below-Cost
Pricing*

Equilibrium Concepts

Chair – Yicheng Gong

17:15–17:40 **Malachy James Gavan**
Negotiated Equilibrium

17:40–18:05 **Sam Ganzfried**
Safe Equilibrium

18:05–18:30 **Yicheng Gong and Yanling Yang**
*The relationship between eigenvectors of payoff matrix and mixed
Nash equilibrium in two-person symmetric zero-sum games*

Friday, July 1

10:00–11:00 PLENARY TALK (7)

Chair – Anna Rettieva

Vladimir Mazalov, Institute of Applied Mathematical Research
KarRC RAS, Russia

“Equilibrium in transportation networks with externalities”

11:15–12:30 PARALLEL SESSIONS (10)

Dynamic Cooperative Games on Graphs

Chair – Mariia Bulgakova

11:15–11:40 **David Kosian**

Dynamic cooperative games on hypergraphs

11:40–12:05 **Aleksandra Grinikh**

Characteristic functions for n-person prisoner's dilemma on the network

12:05–12:30 **Mariia Bulgakova**

The tau value in multistage games with pairwise interactions

Bargaining

Chair – Ovanes Petrosian

11:15–11:40 **Junpeng Xia**

Stable and Balanced Outcome of Bilateral Bargaining on Networks

11:40–12:05 **Wu Haohao and Li Yin**

The Dynamic Nash Bargaining Solution for Two-Stage Cost Sharing Game with Perishable Products

12:05–12:30 **Zeyang Wang and Ovanes Petrosian**

Min-distance Bargaining Solution in Differential Game

Repeated Games

Chair – Hongcheng Dong

11:15–11:40 **Michiko Ogaku**

Mutual insurance for uninsurable income

11:40–12:05 **Xinxiang Guo and Yifen Mu**
The Optimal Play against Hedge Algorithm in Finitely Repeated Two-Player Zero-Sum Games

12:05–12:30 **Hongcheng Dong and Yifen Mu**
The optimal strategy against Fictitious Play in infinitely repeated games

14:00–15:40 PARALLEL SESSIONS (11)

Dynamic Games and Applications – 2

Chair – Anna Tur

14:00–14:25 **Anna N. Rettieva**
Dynamic Multicriteria Game with Pollution Externalities

14:25–14:50 **Anton Bondarev and Thorsten Upmann**
Differential Game of Renewable Resources with Sliding Modes and Hybrid Limit Cycles

14:50–15:15 **Fabio Lamantia, Davide Radi and Tomáš Tichý**
Hybrid dynamics in a resource exploitation game

15:15–15:40 **Anna Tur and Shimai Su**
Estimation of Initial Stock in Pollution Control Problem

Game Theory and Applications – 2

Chair – Anna Ivashko

14:00–14:25 **Mikhail Lutsenko**
Apriori estimation games and random walks on segment

14:25–14:50 **Olga Gorbaneva, Stanislav Mikhalkovich, Anton Murzin and Guennady Ougolnitsky**
Dynamic Game Theoretic Modeling of the Regional Education System on a Cognitive Map

14:50–15:15 **Victor Rozen**
Existence and uniqueness of acceptable outcomes in games with ordered outcomes

15:15–15:40 **Anna Ivashko**
Adaptive Approach in the Two-Sided Mate Choice Model

Methodology

Chair – Alexey Kushnir

14:00–14:25 **Nikita Gulyaev**
Game-theoretic analysis of the Restricted Play principle

14:25–14:50 **Denis Fedyanin**
Games with unknown number of players

14:50–15:15 **Vinod Krishnamoorthy and Alexey Kushnir**
A Simple Characterization of Supply Correspondences

15:15–15:40 **Siddhartha Rastogi**
Teaching Game Theory, Countering Ethical Dilemmas

16:00–16:50 PARALLEL SESSIONS (12)

Public Goods Games

Chair – Kohmei Makihara

16:00–16:25 **Anning Xie**
Club Dynamics and Non-Rival Resources

16:25–16:50 **Kohmei Makihara and Sebastian Bervoets**
Public Goods Game on Network with Kantian Agents

Signaling

Chair – Alexander Vasin

16:00–16:25 **Miguel Angel Roper Garcia**
The Curse of Being Mediocre

16:25–16:50 **Alexander Vasin and Irina Seregina**
Sequential equilibria in multistage signaling games

17:10–17:30 CLOSING SESSION

Chairs – Leon Petrosyan and Nikolay Zenkevich