

# 24th International Conference on Distributed Computer and Communication Networks (DCCN 2021) – AGENDA

## September 20 (Monday) – September 24 (Friday), 2021

### Organizers

V.A. Trapeznikov Institute of Control Sciences of RAS (ICS RAS, Russia, Moscow)

Peoples' Friendship University of Russia (RUDN University), Moscow,

### Tracks

Track A. Computer and Communication Networks: Architecture, Protocols and Technologies. Chair: Vladimir Vishnevsky. Co-chair: Dmitry Kozyrev.

Track B. Modeling of Distributed Systems and Networks. Chair: Konstantin Samouylov. Co-chair: Irina Kochetkova.

Track C. Distributed Systems Applications. Chair: Andrey Koucheryavy. Co-chair: Daria Ostrikova.

Monday, September 20, 2021	TIME (Moscow time)	DAY 1: Opening, Plenary session (part I)
	11:30–11:45	<b>Conference Opening</b> Chairman: <i>Vladimir Vishnevsky</i> , ICS RAS
	11:45–12:00	Welcome Speech: <i>Dmitry Novikov</i> , Director, ICS RAS Welcome Speech: <i>Konstantin Samouylov</i> , Director, AMCT Institute, RUDN
	12:00–13:00	<b>Performance Analysis of DRX Mechanism in LTE-A Networks using Markov Modeling</b> <i>Dharmaraja Selvamuthu</i> , Indian Institute of Technology, India
	13:00–14:00	<b>Recent Advances in Scheduling Theory and Applications in Robotics and Communications</b> <i>Eugene Levner</i> , Holon Institute of Technology, Israel AND <i>Vladimir Vishnevsky</i> , ICS RAS, Russia
	14:00–14:30	Break
	14:30–15:30	<b>Bridging 5G to 6G Networks: Problems and Challenges</b> <i>Luis M. Correia</i> , University of Lisbon, Portugal
	15:30–16:30	<b>Recent results in performance modelling of finite-source retrial queues with collisions and their applications</b> <i>Prof. János Sztrik</i> , University of Debrecen, Hungary
	16:30–17:30	<b>Software Fault Tolerance via Environmental Diversity</b> <i>Kishor S. Trivedi</i> , Duke University, USA

TIME (Moscow time)		DAY 2: Plenary session (part II), Track sessions		
Tuesday, September 21, 2021	11:00–12:00	<b>Towards 6G Non-Terrestrial Networks</b> <i>Giuseppe Araniti</i> , Mediterranea University of Reggio Calabria, Italy		
		<b>A.1.1. Computer and Communication Networks: Architecture, Protocols and Technologies</b> <i>Chairs: Prof. V.Vishnevsky, Prof. K.Samouylov</i>	<b>B.1.1. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. A.Dudin, Prof. C.Kim</i>	<b>C.1.1. Distributed Systems Applications</b> <i>Chairs: Prof. A.Koucheryavy, Prof. R.Kirichek</i>
	12:00–12:15	<b>Malik Alsweity, Ammar Muthanna, Andrey Koucheryavy</b> Traffic management algorithm for V2X based flying fog system (ID 751)	<b>Chesoong Kim, Alexander Dudin, Sergei Dudin, Olga Dudina</b> MULTI-SERVER LOSS QUEUEING SYSTEM WITH THE BMMAP ARRIVAL PROCESS (ID 650)	<b>Dmitry Namiot</b> On the applicability and limitations of formal verification of machine learning systems (ID 588)
	12:15–12:30	<b>Behrooz Daneshmand</b> Survey of Load balancing mechanisms based on SDN in 5G/IMT-2020 (ID 646)	<b>Alexander Dudin, Sergei Dudin, Olga Dudina</b> Система ВМАР/PH/1 с нагревом и охлаждением прибора (ID 578)	<b>Vladimir Vishnevsky, Olga Semenova, Bui Duy Tan</b> Использование машинного обучения для исследования систем поллинга с коррелированными входными потоками (ID 732)
	12:30–12:45	<b>Abbas Alzagher, Andrey Koucheryavy</b> Multi Task Multi-UAV Computation Offloading Enabled Mobile Edge Computing Systems (ID 719)	<b>Alexander Dudin, Sergei Dudin, Olga Dudina</b> Система МАР/PH/1 с автономным ограниченным обслуживанием без прерывания (ID 579)	<b>Anton Bondarchuk, Dmitriy Shashev, Stanislav Shidlovskiy</b> Binary gradient computation and implementation in reconfigurable computing environments (ID 637)
	12:45–13:00		<b>Alexander Dudin, Mei Liu</b> Многолинейная система с разнотипными ненадежными приборами и повторными вызовами (ID 647)	<b>Sergey Astafiev, Alexander Rumyantsev</b> Distributed Computing of Embarrassingly Parallel R Applications using RBOINC Package (ID 634)
	13:00–13:30	Break		
Tuesday, September 21, 2021		<b>A.1.2. Computer and Communication Networks: Architecture, Protocols and Technologies</b> <i>Chairs: Prof. K.Samouylov, Prof. Yu. Gaidamaka</i>	<b>B.1.2. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. A.Krishnamoorthy, Prof. Varghese C. Joshua</i>	<b>C.1.2. Distributed Systems Applications</b> <i>Chairs: Dr. I.Kochetkova, Dr. D.Ostrikova</i>
	13:30–13:45	<b>Amani Sabbagh, Maxim Shcherbakov</b> An efficient cluster routing protocol for vehicular ad-hoc network using bio-metaheuristic algorithm (ID 744)	<b>Nisha Mathew, Varghese C. Joshua, Achyutha Krishnamoorthy</b> A Two Server Queueing Inventory Model With Two Types of Customers and a Dedicated Server (ID 624)	<b>Vadim Efimov</b> Targeted massive incident notification system for a globally distributed computation network (ID 615)
	13:45–14:00	<b>Amani Sabbagh</b> Evaluation of reactive routing protocols performance under malicious attacks in VANET (ID 706)	<b>Khamis Abdullah Khamis AL Maqbali, Varghese C. Joshua, Achyutha Krishnamoorthy</b> On A Queue With Marked Compound Poisson Input And Exponentially Distributed Batch Service (ID 609)	<b>Sergey Poslavskiy, Dmitriy Shashev, Stanislav Shidlovskiy</b> Object classification using neural networks with binary input and binary feature extraction (ID 728)
	14:00–14:15	<b>Andrey Tyulin, Alexander Chursin, Igor Dubina</b> Development and application of intelligent systems for optimal production management of unique products (ID 673)	<b>Sinu Lal T S, Achyutha Krishnamoorthy, Varghese C. Joshua</b> A queueing model for observation of suspicious data (ID 700)	<b>Konstantin Mikhailov, Alexey Abramov</b> An innovative solution for analyzing the dynamics of slowly developing processes of changing the geometry of engineering structures using the example of a system for strengthening a rocky slope (ID 717)

Tuesday, September 21, 2021	14:15–14:30	<b>Andrey Tyulin, Alexander Chursin, Alexander Yudin, Polina Grosheva</b> Basis for the formation of a digital ecosystem of an industrial holding (ID 672)	<b>Achyutha Krishnamoorthy, Anu Joshua</b> Batch Service Queueing System Associated with Inventory Transport (ID 627)	<b>Ekaterina Panteley, Viacheslav Abrosimov</b> Machine learning for recognition of events in hostile environments (ID 708)
	14:30–14:45	<b>Ivan Tsitovich</b> On Group Polling Method in Structured Wireless Sensor Networks for Very Rare Events Detecting (ID 597)	<b>Rostislav Razumchik</b> Joint stationary distribution in the two-channel queueing system with ordered entry, governed by one queue skipping policy (ID 685)	<b>Evgenia Anikina, Andrey Kalashnikov</b> Management of risks for complex computer network based on a general arbitration scheme (ID 691)
	14:45–15:00	<b>Vladimir Vishnevsky, Konstantin Vytovtov, Elizaveta Barabanova, Vladislav Buzdin</b> Local Hybrid Navigation System of Tethered High-Altitude Platform (ID 734)	<b>Katsiaryna Kosarava, Dzmitry Kopats</b> Application of a queueing network with positive and negative arrivals for modeling a computer network with antivirus software (ID 613)	<b>Sergey Shorokhov</b> On Deep Option Pricing in Local Volatility Models (ID 629)
	15:00–15:15	<b>Konstantin Vytovtov, Elizaveta Barabanova, Vladimir Vishnevsky</b> Investigation of wireless hybrid communication system reliability under external influences (ID 641)	<b>Valentina Klimenok, Alexander Dudin, Olga Semenova</b> Unreliable retrieval queueing system with a backup server (ID 844)	
	15:15–15:30	<b>Alexander Grebeshkov</b> Ontology-based model for sensor network fault management (ID 620)	<b>Tatiana Rusilko</b> Asymptotic Analysis of a Closed Exponential Queueing Network with Unreliable Nodes (ID 603)	
	15:30–16:00	Break		
Tuesday, September 21, 2021		<b>A.1.3. Computer and Communication Networks: Architecture, Protocols and Technologies</b> <i>Chairs: Prof. S.Stepanov, Dr. E.Sopin</i>	<b>B.1.3. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. N.Markovich, Prof. U.Krieaer</i>	
	16:00–16:15	<b>Sergey Stepanov, Mikhail Stepanov, Umer Andrabi, Dmitriy Petrov, Juvent Ndayikunda</b> Enhancing the Resource Sharing Capabilities of a Network by Deploying Network Slicing Procedure (ID 686)	<b>Natalia Markovich, Udo Krieger</b> Calculating the PageRank Vector of a Scale-Free Web Network Growing by Preferential Attachment (ID 600)	
	16:15–16:30	<b>Yves Adou, Ekaterina Markova</b> Analysis of non-Preemptive Scheduling for 5G Network Model within Slicing Framework (ID 695)	<b>Maksim Ryzhov, Natalia Markovich</b> Information Spreading in Non-homogeneous Evolving Networks (ID 683)	
	16:30–16:45	<b>Faina Moskaleva, Ekaterina Lisovskaya, Lyubov Lapshenkova, Sergey Shorgin, Yuliya Gaidamaka</b> Development of Radio Admission Scheme Model for 5G Network Slicing Framework as a Retrieval Queue (ID 750)	<b>Voronina Maria, Yurii Orlov</b> Digitization of student's personal characteristics: statistical analysis of psychological tests results and the Spearman effect (ID 716)	
	16:45–17:00	<b>Kirill Ageev, Eduard Sopin</b> On the convergence of an iterative method for approximate analysis of a resource queueing system with signals (ID 746)	<b>Alexey Kislitsyn, Yurii Orlov</b> Statistical model of graph structure based on "VKontakte" social network (ID 718)	
	17:00–17:15	<b>Stepan Rogozin</b> Ageneralized loss priority system with application to bandwidth sharing (ID 714)	<b>Iliyan Petrov</b> Hybrid MCDM for Cloud Services: AHP(blocks) & Entropy, TOPSIS & MOORA (case study based on QoS and QoE criteria) (ID 730)	
	17:15–17:30	<b>Hoang Kinh</b> Adaptive learning in computer design of ship integrated management systems (ID 572)	<b>Iliyan Petrov</b> Combined "AHP-Block & Entropy" weighting of QoS/QoE criteria for Cloud Services selection with TOPSIS, MOORA and WPM (methodology improvements) (ID 731)	
	17:30–17:45	<b>Anastasia Marochkina, Alexander Paramonov, Tatiana Tatarnikova</b> Ultra-dense Internet of Things model network (ID 752)	<b>Yuriy Obzherin, Mikhail Nikitin, Stanislav Sidorov</b> Hidden Markov Model of the Control System Latent Failures of Technological Cell (ID 612)	
	Tuesday, September 21, 2021			

17:45–18:00

**Ruslana Nekrasova**

Stability conditions for a multi-orbit retrial system with general retrials under classical retrial policy (ID 606)

Wednesday, September 22, 2021	TIME (Moscow time)	DAY 3: Track sessions		
		<b>A.2.1. Computer and Communication Networks: Architecture, Protocols and Technologies</b> <i>Chairs: Prof. D.Namiot, Prof. L.Abrosimov</i>	<b>B.2.1. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. A.Melikov, Prof. A.Nazarov</i>	<b>C.2.1. Distributed Systems Applications</b> <i>Chairs: Dr. E.Markova, Prof. T.Atanasova</i>
	11:00–11:15	<b>Aleksandr Soldatenko, Daria Semenova</b> Algorithm of finding all maximal induced bicliques of hypergraph (ID 693)	<b>Anatoly Nazarov, Alexander Moiseev, Ivan Lapatin, Svetlana Paul, Olga Lizyura, Pavel Pristupa, Xi PENG, Li Chen, Bo BAI</b> Analysis of the Amount of Information in Semi-Markov Flow (ID 625)	<b>Mainak Mondal, Stanislav Shidlovskiy, Dmitriy Shashev, Michael Okunsky</b> Autonomous Infrared Guided UAV Landing System (ID 607)
	11:15–11:30	<b>Alyona Borisovskaya</b> Linux network device drivers: NAPI polling in kernel threads (ID 688)	<b>Agassi Melikov, Mamed Shahmaliyev, János Sztrik</b> Algorithmic Approach to Study the Model of Perishable Inventory System with Repeated Customers (ID 589)	<b>Alexander Grusho, Nick Grusho, Michael Zabezhailo, Elena Timonina</b> Statistical Method for Support of Responsible Decision (ID 704)
	11:30–11:45	<b>Van Dai Pham, Hao Do Phuc, Tran Duc Le, Ruslan Kirichek</b> A Method for Link Quality Estimation in LoRa Network based on Support Vector Machine (ID 748)	<b>Elena Danilyuk, Svetlana Moiseeva, Anatoly Nazarov</b> Asymptotic Diffusion Analysis of an Retrial Queueing System M/M/1 with Impatient Calls (ID 707)	<b>Dmitry Kochetkov, Aliaksandr Birukou, Anna Ermolayeva</b> The Importance of Conference Proceedings in Research Evaluation: a Methodology for Assessing Conference Impact (ID 721)
	11:45–12:00	<b>Tran Duc Le, Nguyen Duc Tai, Le Ba Luong, Van Dai Pham, Ruslan Kirichek</b> Analysis of Network Security Issues in the Join Procedure of LoRaWAN (ID 846)	<b>Konstantin Vytovtov, Elizaveta Barabanova, Vladimir Vishnevsky</b> Transient behavior of the M M 1 n queueing system with piecewise-constant information flows (ID 640)	<b>Evgeny Mikhailov, Ivan Fedotov, Andrey Larionov</b> Эффективность радиочастотной идентификации транспортных средств с использованием аналитической аппроксимации и имитационного моделирования (ID 720)
	12:00–12:15	<b>Oleg Boychenko</b> Evaluation of the quality and optimization functioning information systems (ID 605)	<b>Anatoly Nazarov, Svetlana Paul, Tuan Phung-Duc, Maria Morozova</b> Scaling limits of a tandem retrial queue with common orbit and Poisson arrival process (ID 711)	
	12:15–12:30	<b>Sergey Kislyakov, Aleksandr Sotnikov, Vladimir Akishin</b> Customer Experience Model for Customer Digital Twin (ID 632)	<b>Anatoly Nazarov, Maria Samorodova</b> Waiting Time Asymptotic Analysis of a M/GI/1 Retrial Queue System (ID 576)	
	12:30–12:45	<b>Igor Buzhin, Maxim Bessonov, Yuriy Mironov, Mais Farkhadov</b> Integrity, resilience and security of 5G transport networks based on SDN/NFV technologies (ID 726)	<b>Nikita Krishtalev, Ekaterina Lisovskaya, Alexander Moiseev</b> Resource Queueing System M/M/∞ in Random Environment (ID 694)	
	12:45–13:00	<b>Albina Pomogalova, Dmitriy Sazonov, Evgeny Donskov, Alexey Borodin, Ruslan Kirichek</b> Identification of narrowband wireless communication networks systems and Internet of Things devices using Blockchain technology (ID 845)	<b>Ivan Lapatin, Alexey Blaginin</b> The two-dimensional Output Process of Retrial Queue with Two-Way Communication and MMPP input (ID 743)	
	13:00–13:30	Break		



Wednesday, September 22, 2021			<b>B.2.2. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. J.Sztrik, Prof. E.Morozov</i>	
	13:30–13:45		<b>Andras Meszaros, Evsey Morozov, Taisia Morozova, Miklos Telek</b> Numerical analysis of a retrial system with unreliable servers based on Laplace transform description (ID 703)	
	13:45–14:00		<b>Irina Peshkova, Evsey Morozov, Mariia Maltseva</b> On regenerative estimation of extremal index in queueing systems (ID 715)	
	14:00–14:15		<b>Ksenia Zhukova, Evsey Morozov</b> A large deviation analysis of a queueing system with general retrieval time (ID 698)	
	14:15–14:30		<b>Alexander Rumyantsev, Davide Pastorello, Enrico Blanzieri, Valter Cavecchia</b> On Convergence of Tabu-Enhanced Quantum Annealing Algorithm (ID 623)	
	14:30–14:45		<b>Ádám Tóth, János Sztrik</b> The Simulation of Finite-Source Retrial Queueing Systems With Two-Way Communications to the Orbit and Impatient Customers (ID 601)	
	14:45–15:00		<b>Ádám Tóth, János Sztrik</b> Simulation of Two-Way Communication Retrial Queueing Systems With Non-reliable Server, Impatient Customers to the Orbit and Blocking (ID 602)	
	15:00–15:15		<b>Mohamed Hedi Zaghouani, Hamza Nemouchi, János Sztrik</b> Analysis of cognitive radio networks with balking and reneging (ID 622)	
	15:15–15:30		<b>Attila Kuki, Tamás Bérczes, Ádám Tóth, János Sztrik</b> Modeling of non-reliable retrial queueing systems with collisions and catastrophic breakdowns (ID 633)	
	15:30–16:00	Break		
			<b>B.2.3. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. A.Andronov, Prof. V.Rykov</i>	
Wednesday, September 22, 2021	16:00–16:15		<b>Alexander Andronov, Iakov Dalinger, Nadezda Spiridovska</b> Computational algorithm for an analysis of a single-line queueing system with arrived alternating Poisson flow (ID 626)	
	16:15–16:30		<b>Ekaterina Bulinskaya</b> Risks Ordering and Reliability of Some Applied Probability Systems (ID 643)	
	16:30–16:45		<b>Galina Zverkina</b> On polynomial convergence rate for reliability system with warm standby (ID 610)	

16:45–17:00	<b>Boyan Dimitrov, Vladimir Rykov</b> On k-out-of-n System under Full Repair and Arbitrary Distributed Repair Time (ID 884)
17:00–17:15	<b>Vladimir Rykov, Dmitry Kozyrev, Nika Ivanova</b> Применение теории разложимых полурегенерирующих процессов к исследованию системы k-из-n:F с частичным ремонтом (ID 765)
17:15–17:30	<b>Hilquias Cravid, Ivan Zaryadov, Tatiana Milovanova</b> Single-server queueing systems with exponential service times and threshold-based renovation (ID 684)
17:30–17:45	<b>Hector Gibson Kinmanhon Houankpo, Dmitry Kozyrev, Emmanuel NIBASUMBA, Bienvenue N'dah MOUALE MOUTOUAMA</b> Reliability Model of a Homogeneous Hot-Standby k-out-of-n System (ID 758)
17:45–18:00	<b>Alexander Dagaev, Van Dai Pham, Ruslan Kirichek, O.V. Afanaseva, E.A. Yakovleva</b> Availability factor analysis of a network in mesh structure (ID 747)

Thursday, September 23, 2021	TIME (Moscow time)	DAY 4: Track sessions	
		<b>B.3.1. Modeling of Distributed Systems and Networks</b> <i>Chairs: Prof. D.Efrosinin, Dr. S.Vasilyev</i>	<b>C.3.1. Distributed Systems Applications</b> <i>Chairs: Prof. E.Shchetinin, Prof. D.Kulyabov</i>
	11:00–11:15	<b>Maksim Zharkov, Alexander Kazakov, Anna Lempert</b> К вопросу о применении теории массового обслуживания при моделировании работы железнодорожных станций (ID 689)	<b>Eugene Yu. Shchetinin, Leonid A. Sevastianov, Anastasia V. Demidova, Yury A. Blinkov</b> Detection of cardiac arrhythmia based on the analysis of electrocardiogram using deep learning models (ID 593)
	11:15–11:30	<b>Anastasia Gorbunova, Alexey Lebedev</b> Response Time Estimate for a Fork-join System with Pareto Distributed Service Time as a Model of a Cloud Computing System Using Neural Networks (ID 733)	<b>Dmitry Kulyabov, Anna Korolkova, Anastasia Demidova</b> Surrogate modeling assistant software (ID 705)
	11:30–11:45	<b>Anastasia Gorbunova, Vladimir Vishnevsky</b> Evaluation of the Performance Parameters of a Closed Queuing Network Using Artificial Neural Networks (ID 727)	<b>Vladislav Shatravin, Dmitriy Shashev, Stanislav Shidlovskiy</b> Developing of models of dynamically reconfigurable neural network accelerators based on homogeneous computing environments (ID 611)
	11:45–12:00	<b>Dmitry Efrosinin, Natalia Stepanova, János Sztrik</b> Algorithmic analysis of finite-source multi-server heterogeneous queueing systems (ID 759)	<b>Andrey Borisov, Robert Mukharlyamov, Kaspirovich Ivan</b> Construction of differential equations of a nonholonomic mechanical system and perspectives of motion control using artificial intelligence methods (ID 710)
	12:00–12:15	<b>Sergey Vasilyev, Galina Tsareva, Shakhmurad Kanzitdinov, Mohamed Adel Bouatta</b> Queueing analysis of a large-scale system with a small parameter (ID 953)	<b>Alexander Yudin, Polina Grosheva</b> Intelligent system for forecasting the effectiveness of space services in solving economic problems (ID 668)
	12:15–12:30	<b>Evgeny Polin, Svetlana Moiseeva, Alexander Moiseev</b> Асимптотический анализ неоднородной СМО $M GI ∞$ , функционирующей в марковской случайной среде, в условии эквивалентного роста времени обслуживания на приборах (ID 598)	<b>Yury Zatuliveter, Elena Fishchenko</b> The Automata-based Approach to Large Systems Control in the Global Computer Environment (ID 702)
	12:30–12:45	<b>Maria Shklennik, Alexander Moiseev, Lyubov Zadiranova</b> Метод марковского суммирования для исследования потока повторных обращений в двухфазной системе $MAR GI ∞$ с мгновенной обратной связью (ID 687)	<b>Marina Buranova, Vyacheslav Kartashevskiy</b> OpenFlow-based software-defined networking queue model (ID 701)
	12:45–13:00	<b>Evgeny Golovinov, Dmitrii Aminev, Dmitry Kozyrev, Vladimir Kulygin</b> Определение показателей долговечности распределённой коммуникационной сети метеостанций минимальной конфигурации (ID 682)	
	13:00–13:30	Break	
	13:30–13:45	<b>János Sztrik</b> Software Packages for Teaching Queueing Theory (ID 586)	





Friday, September 24, 2021	TIME (Moscow time)	DAY 5: Round Table and Conference Closing
	11:00–12:00	<b>Round Table: On applications of the distributed systems (Круглый стол по вопросам приложений распределённых систем)</b>  <i>Chairs: Prof. Vladimir Vishnevsky, Prof. Konstantin Samouylov</i>
	12:00–12:15	<b>Conference Closing</b>