

*The International Scientific and  
Technical Conference*

***"Problems of Engineering Sciences"***

*Yerevan University of International Relations  
named after A. Shirakatsi*

*Yerevan – Republic of Armenia, May 20-22, 2022*





**THE INTERNATIONAL SCIENTIFIC AND TECHNICAL CONFERENCE  
"PROBLEMS OF ENGINEERING SCIENCES"  
(Yerevan – Republic of Armenia, May 20-22, 2022)**

**PROGRAM STRUCTURE**

<b>Yerevan University of International Relations named after A. Shirakatsi</b>	<b>MAY 21, 2022</b>
<b>9.00-10.00</b>	<b>Registration of participants</b>
<b>10.00-10.30</b>	<b>Opening of the conference, welcome speeches</b>
<b>Yerevan University of International Relations named after A. Shirakatsi</b>	<b>SESSION CO-CHAIRMAN: Vagharshak Madoyan, Gela Kipiani</b>
<b>10.30-14.30</b>	<b><i>Bidzina Abesadze. INVESTIGATION OF PROPERTIES AND PARAMETERS OF COMPOSITE PLASTICS ON THE BASIS OF THEORIES OF HEREDITY</i></b>
	<b><i>Amiran Aptsiauri, Gegi Aptsiauri EVAPORATION - INFLUENCE OF CONDENSATION PROCESSES ON THE SUSTAINABILITY OF TORNADO-LIKE EVENTS</i></b>
	<b><i>Amiran Aptsiauri. THE LAWS OF THE MICRO PARTICLES AGAINST THE LAWS OF</i></b>

***PHENOMENOLOGICAL THERMODYNAMICS  
Vakhtang Archvadze. POSSIBLE THEMATIC  
INTERPRETATIONS OF DIFFERENT  
DIMENSIONAL MODELS IN  
ARCHITECTURAL-CONSTRUCTION DESIGN***

***Gocha Badzgaradze DETERMINATION OF  
SEISMIC INERTIAL LOADS OF AN ARCH  
DAM***

***Lia Balanchivadze, Nino Nakvetauri, Boris  
Beraia. LIABILITY OF FRAME-PANEL  
BUILDINGS BY STRETCHING  
REINFORCEMENT UNDER CONSTRUCTION  
CONDITIONS.***

***Karolina Bednarczyk., Paweł Rajczyk. A NEW  
DESIGN OF THE DISC FOR FINISHING THE  
SURFACE OF MINERAL - STONE CLADDING***

***Vasili Beruashvili. STRUCTURAL TOPOLOGY  
OPTIMIZATION OF HIGH-RISE BUILDINGS  
CONSIDERING WIND AND GRAVITY LOADS***

***Zurab Bobokhidze. SLAB FOUNDATION  
REPORT BASED ON GROUND  
GEOTECHNICAL ALGORITHM***

***Shalva Bosikashvili , Irakli Ramishvili , Revaz  
Enukidze , Goga Chakhaia. DEVELOPMENT OF  
OPTIMAL ENGINEERING TECHNOLOGY  
AGAINST EXPECTED DEBRIS FLOW IN  
NAGHVAREVIWATERSTREAM***

*Alexander Buachidze. INVESTIGATION OF FLAT BOUNDARY PROBLEMS OF ELONGATION BY THE THEORY OF NONLINEARITY FOR THE CIRCULAR SEGMENT BY THE METHOD OF ANALYTICAL CONTINUITY*

*Aleks Burduladze, Tengiz Papuashvili. USE OF LOCAL MATERIALS IN ROAD CONSTRUCTION*

*Nino Chorkhauri. ALGORITHM AND SOFTWARE FOR ANALYSIS OF PLATE STRUCTURE WITH RECTANGULAR CUT*

*David Dzhankarashvili, Demur Tabatadze, Iosif Kakutashvili. DEPENDENCE OF THE LOAD-BEARING CAPACITY OF A PRESTRESSED CABLE SYSTEM IN THE FORM OF A HYPATE ON THE PRESTRESS OF THE LOAD-BEARING CABLES, TAKING INTO ACCOUNT THE PLASTIC PROPERTIES OF THE MATERIAL AND GEOMETRIC NON-LINEARITY*

*Medea Dzotsenidze, Tea Nareklashvili. CONSTRUCTION SOFTWARE RISKS AND SOME EVALUATION ISSUES*

*Tsira Elgendarashvili, Natalia Elgendarashvili. LOCAL CRITERION OF TECHNICAL-ECONOMIC EVALUATION WHEN DESIGNING THE RECONSTRUCTION OF RESIDENTIAL BUILDINGS*

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***Khatia Gabadze. PERSPECTIVES OF USING POLYMER COBIAX SYSTEMS IN GEORGIAN CONSTRUCTION SPACE***

***Ioseb Giorgobiani. THE PROBLEM OF CALCULATING SHELL STRUCTURES WITH CUT-OUTS MADE OF VARIOUS COMPOSITE MATERIALS***

***Levan Grigalashvili, Nino Pailodze, Bidzina Grigalashvili. GEORGIA ACCOUNTING AND REPORTING REFORM A BRIEF OVERVIEW OF MARKET ECONOMY CONDITIONS***

***David Gurgenidze, Gela Kipiani, Alexander Buachidze. CALCULATION OF SEISMIC IMPACT ON ARCH AND DOME DAMS***

***Zaza Jangidze. NUMERICAL METHOD FOR CALCULATION OF SHALLOW SHELLS SEISMIC LOAD***

***Marina Javakhishvili, Levan Bogveradze, David Julukhidze. MODERN TECHNOLOGIES OF RESTORATION AND STRENGTHENING WORKS OF DAMAGED HOUSES***

***Kertevan Jerenashvili. USE OF COMPOSITE COBWEBS SYSTEMS IN HIGH-RISE MONOLITHIC REINFORCED CONCRETE BUILDINGS***

***Nikoloz Kachkachishvili. TENSION-DEFORMED OF MACHINERY BODIES CONDITION RESEARCH***

*Murad Kalabegashvili, Demur Tabatadze, Ana Tabatadze. ON THE REGULATION OF THE FORCE DURING VIBRATION OF A MULTI-STOUREY BUILDING CAUSED BY IMPULSIVE MOVEMENT OF THE SOIL*

*Martin Mamoun Kanan. EVALUATION OF MODE OF DEFORMATION FEATURES OF PLANAR ROD SYSTEMS NODES FROM GLASS-FIBER COMPOSITES*

*Zeinab Karumidze. VOLCANIC ASHES – LOW-COST, ENVIRONMENTALLY-FRIENDLY RAW MATERIAL FOR LIGHT CONCRETE*

*Tamaz Khmelidze, Gela Kipiani. PROBLEMS RELATED TO INERT WASTE MANAGEMENT*

*Zaza Khokerashvili, Davit Tsanava. PROPAGATION OF CARBON MONOXIDE IN ROAD TUNNELS IN CASE OF FIRE BY CONSIDERING THE CRITICAL VELOCITY, BACKLAYERING AND GRADIENT FACTOR*

*Vladimer Kikadze. DAMAGE TO STRUCTURES MADE OF COMPOSITES DURING OPERATION*

*O. Kikvidze, M. Jibladze. DEVELOPMENT OF CALCULATION METHOD OF STRUCTURAL ELEMENTS STRENGTH TAKING INTO ACCOUNT THE MATERIAL DAMAGE PARAMETER*

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	<p><i>O. Kikvidze, M. Sharabidze. CALCULATION OF PIPELINE FOR STRENGTH AT NON STATIONARY FLOW OF NONLINEAR VISCOUS MASS</i></p> <p><i>Gela Kipiani, Tamaz Obgadze. MATHEMATICAL SIMULATION OF SUSPENSION DYNAMICS</i></p>
<p><b>Yerevan University of International Relations named after A. Shirakatsi</b></p> <p><b>14.30-15.30</b></p> <p><b>15.30-19.30</b></p>	<p><i>Lunch</i></p> <p><b>SESSION</b> <b>CO-CHAIRMAN: Amiran Apciauri, Omar Ianchava</b></p> <p><i>Gela Kipiani, Giorgi Bichiashvili, Tinatin Magradze. CALCULATION BY NUMERICAL METHODS OF SHELL POLYGONAL FOUNDATIONS</i></p>



***Gela Kipiani, Elina Kristesiashvili. RESEARCH OF NONLINEAR OSCILLATIONS OF TOWER BUILDINGS DURING IMPULSE IMPACT USING FINITE ELEMENT METHOD***

***David Kipiani. EXAMINATION OF THE TENSE-DEFORMED CONDITION OF SECTIONED THIN SHELLS WITH HARDNESS RIBS***

***Levan kipiani. REVERSE ENGINEERING AND RENSOMWARE***

***Marcin Knapiński, Paweł Rajczyk. THE MECHANISM OF COOPERATION OF DIAMOND GRAIN WITH THE BINDER DURING ABRASIVE IMPACT ON THE SURFACE OF THE PROCESSED MATERIAL***

***Ketevan Korkia. NUMERICAL EXAMINATION OF HOMOGENEOUS LAYERED SHELLS***

***Leila Kristesiashvili. CALCULATION OF THE SPATIAL CONSTRUCTIONS WITH THE THIN WALLS THROUGH RADIOACTIVE IRRADIATION***

***Irma Kutsia, Tea Khutsishvili. EARTHQUAKE AND MODERN SEISMIC RESISTANCE SCIENTIFIC MEANS***

***Marina Kurdadze, Luka Kemoklidze. ADVANTAGE ANALYSIS OF SCRAMBLING CODE IN FEEDBACK SYSTEMS***

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***Omar Lanchava. LIFE-SAVING PROBLEMS  
DURING FIRE IN ROAD TUNNELS***

***Lenka Lausova. DYNAMIC STABILITY OF  
LAYERED PLATES***

***Anush Madoyan. TYPIFICATION OF MODERN 4-5-  
STAR HOTELS OF THE REPUBLIC OF ARMENIA***

***David Madoyan. THE DEVELOPMENT OF OPTIONS  
FOR STRUCTURAL SOLUTIONS OF RESIDENTIAL  
LOW-RISE BUILDINGS IN PRECAST CONCRETE***

***Tinatin Magradze. CALCULATION OF THIN-  
WALLED SPATIAL STRUCTURES WITH  
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***Boris Maisuradze, Zurab Megrelishvili, Giorgi  
Gorgisheli. ABOUT THE TRAFFIC VERTICAL  
LOADS ON MOTORWAY BRIDGES DESIGN***

***Zurab Megrelishvili, Iela Bestaeva, David  
Chkhubiani. STUDY OF THE ION-EXCHANGE  
PROPERTIES OF ASCANITE CLAY OF  
GEORGIA***

***Giorgi Meishvili, Giorgi Mchedlishvili, Saba  
Surmava. THE IMPORTANCE OF THE  
CAPITAL MARKET AND KEY ASPECTS OF  
ITS DEVELOPMENT***

***Rajczyk Jarosław, Marlena Rajczyk, Pawel  
Rajczyk. THE USE OF RUBBER DUST IN  
ASPHALT MIXTURES***

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*Marlena Rajczyk, Damian Jończyk.*  
**REINFORCEMENT OF BUILDING  
STRUCTURES WITH COMPOSITE BASALT  
BARS**

*Nikoloz Rukhadze.* **FINANCIAL RELATED  
CAUSES CONTRIBUTING TO  
CONSTRUCTION PROJECT DELAYS IN  
GEORGIA**

*Nugzar Rurua, Konstantine Mchedlishvili, Vasili  
Khorava, Angi Gurgenidze.* **NARROW-GAUGE  
RAILWAYS FOR THE MOUNTAINOUS  
REGIONS OF GEORGIA**

*Nugzar Rurua, Boris Maisuradze, Ioseb  
Utmelidze.* **ON THE DETERMINATION OF THE  
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COMPOSITE STEEL AND CONCRETE BEAM  
SUPERSTRUCTURE WITH A LENGTH  $L=63.6$  M  
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*Murman Kublashvili, Teimuraz Saghinadze.*  
**ADVANTAGES OF GEOMETRICALLY  
OPTIMIZED FINITE DIFFERENCE  
SCHEMAS**

*Giorgi Sulashvili, Nino Taruashvili, Gocha  
Nadiradze.* **SOME ASPECTS OF IMPROVING  
THE EFFICIENCY AND EFFECTIVENESS OF  
BUSINESS**

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*Malkhaz Sulashvili, Olga Khutsishvili, Irine Neparidze. DIGITAL TRANSFORMATION*

*Vazha Sulashvili. DETERMINATION OF THE PULLING ABILITY OF ELASTIC-PLASTIC TILES AND MEMBRANES*

*Ana Tabatadze. SELECTION OF RESET RELIABILITY COEFFICIENT BASED ON TEMPERATURE FACTOR*

*Iamze Taniashvili. DEFECTS OF MONOLITHIC BUILDINGS AND QUALITY ASSESSMENT ACCORDING TO ECONOMIC INDICATORS*

*Malkhaz Tsikarishvili, Teimuraz Bulia, Maya Dadvani, Vakhtang Abashidze. ON THE TECHNICAL EXPERTISE OF BUILDINGS FOR SPECIAL PURPOSES*

*Malhaz Tsikarishvili, Teimuraz Bulia, Ketevan Tsikarishvili. LAYING OUT MODELS OF CHOICE OF METHODS OF MANUFACTURING EXPERTISE AND SPLIT STANDS EDGE*

*Fatima Verulashvili. MULTILAYER COMPOSED OF ORTHOTROPIC LAYERS CALCULATION OF COLLAPSIBLE SHELLS*

*Gega Zubiashvili. INTERNATIONAL EXPERIENCE USE IN LOCAL BACKGROUND, FOR FAÇADE INSULATION WITH ENERGY EFFICIENT MATERIALS*

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<b>09.00-14.00</b>	<p><b>MAY 22, 2022</b></p> <p><b>Familiarity with the historical architectural and cultural heritage of Armenia Visit the following destinations:</b></p> <ol style="list-style-type: none"> <li><b>1. Excursion to St. Yerevan</b></li> <li><b>2. Echmi one</b></li> <li><b>3. Archaeological Museum</b></li> <li><b>4. Ethnographic Museum</b></li> <li><b>5. Lake Sevan</b></li> </ol>
<b>14.00.-15.00</b>	<b>Lunch</b>
<b>15.00.-16.00</b>	<p><b>Plenary session, summary of conference, decision on the venue of the next conference, conference closing ceremony</b></p>
<b>18.00</b>	<b>Banquette</b>

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