

# **International Conference on Problems of Thermal Physics and Power Engineering (PTPPE 2017)**

Journal of Physics: Conference Series Volume 891

Moscow, Russia  
9 - 11 October 2017

Part 1 of 3

**Editor:**

**Alexey V. Dedov**

ISBN: 978-1-5108-5212-9  
ISSN: 1742-6588

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2017) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## PART 1

### 1. BOILING, EVAPORATION AND TWO-PHASE FLOWS

<b>RECOMMENDATIONS FOR THE HEAT TRANSFER ASSESSMENT FOR NATURAL CONVECTION BOILING OF MICROFINNED SURFACES</b> .....	1
<i>Yu F Gortyshov, I A Popov, A V Shchelchikov, A N Skrypnik</i>	
<b>A STUDY OF EXTERNAL HEAT EXCHANGE BETWEEN THE VIBROFLUIDIZED BED SURFACE AND THE COOLANT GAS IN DEVICES USED FOR SPENT NUCLEAR FUEL REGENERATION</b> .....	8
<i>B G Sapozhnikov, A M Gorbunova, Yu O Zelenkova, N P Shiriaeva</i>	
<b>EXPERIMENTAL AND NUMERICAL STUDY OF HEAT TRANSFER IN A BUBBLY TURBULENT FLOW IN AN ABRUPT PIPE EXPANSION</b> .....	13
<i>P D Lobanov, M A Pakhomov</i>	
<b>SURFACE LAYER MOTION IN PLANETARY ATMOSPHERE CONTAINING FOG OF CONDENSED GASES</b> .....	21
<i>E N Datsenko, N I Vasiliev, I O Orlova, N N Avakimyan</i>	
<b>POTENTIAL ENERGY DISTRIBUTION FUNCTION AND ITS APPLICATION TO THE PROBLEM OF EVAPORATION</b> .....	25
<i>D N Gerasimov, E I Yurin</i>	
<b>THE HEAT AND MASS TRANSFER PROCESSES AT THE COOLING OF STRONG HEATED SPHERE IN A COLD LIQUID</b> .....	30
<i>Yu Yu Puzina</i>	
<b>THE EFFECT OF ELECTRIC FIELD ON HEAT TRANSFER AT BOILING ON POROUS SURFACE</b> .....	36
<i>M K Bologa, I M Chernica, I V Kojevnikov, O I Mardarskii</i>	
<b>EVOLUTION OF STEAM-WATER FLOW STRUCTURE UNDER SUBCOOLED WATER BOILING AT SMOOTH AND STRUCTURED HEATING SURFACES</b> .....	43
<i>N V Vasiliev, Yu A Zeigarnik, K A Khodakov</i>	
<b>NUMERICAL SIMULATION OF PULSATION FLOW IN THE VAPOUR CHANNEL OF SHORT LOW TEMPERATURE HEAT PIPES AT HIGH HEAT LOADS</b> .....	50
<i>A V Seryakov, A V Konkin</i>	
<b>INTEGRATED EXPERIMENTAL AND THEORETICAL STUDY OF EVAPORATION PROCESS OF NONIDEAL SOLUTIONS</b> .....	56
<i>E M Bochkareva, V V Terekhov, A D Nazarov, N B Miskiv</i>	
<b>SUPERHEATED WATER ATOMIZATION: SOME NEW ASPECTS OF CONTROL AND DETERMINING DISPERSE CHARACTERISTICS OF ATOMIZATION PLUME IN MICRON AND SUBMICRON RANGES OF DROPLET SIZE*</b> .....	62
<i>V. I. Zalkind, Yu. A. Zeigarnik, V. L. Nizovskiy, L. V. Nizovskiy, S. S. Schigel</i>	
<b>HEAT TRANSFER IN AN EVAPORATION-CONDENSATION SYSTEM IN SIMULATED WEIGHTLESSNESS CONDITIONS</b> .....	72
<i>M K Bologa, F P Grosu, I V Kozhevnikov, O V Motorin, A A Polikarpov</i>	
<b>A PREDICTION METHOD FOR ENTRAINED LIQUID FRACTION IN ADIABATIC GAS-LIQUID FLOW AT HIGH REDUCED PRESSURE</b> .....	78
<i>M V Minko, V V Yagov</i>	
<b>INTENSIVE COOLING METALLIC BODIES WITH LOW THERMAL CONDUCTIVITY IN FILM BOILING OF ETHANOL</b> .....	86
<i>A R Zabirotov, V V Yagov, P K Kanin</i>	
<b>HYDRODYNAMICS, THERMODYNAMICS, AND ACOUSTICS OF EXPONENTIAL GROWTH OF THE VAPOR BUBBLES AT SATURATED BOILING</b> .....	90
<i>B M Dorofeev, V I Volkova</i>	
<b>CALCULATING INVESTIGATION OF LOW TEMPERATURE DESALINATION PROCESSES CHARACTERISTICS</b> .....	94
<i>V Tonkonog, A Tukmakov, S Arslanova, Z Akbirov, A Loentiev</i>	

<b>EVAPORATION OF OIL-WATER EMULSION DROPS WHEN HEATED AT HIGH TEMPERATURE .....</b>	<b>99</b>
<i>P A Strizhak, M V Piskunov, G V Kuznetsov, I S Voytkov</i>	
<b>EXPERIMENTAL STUDY OF SUPERFLUID HELIUM BOILING ON A CYLINDRICAL HEATER WITHIN THE POROUS SHELL.....</b>	<b>106</b>
<i>P V Korolyov, Yu Yu Puzina</i>	
<b>EXPERIMENTAL STUDY OF THERMO-HYDRAULIC CHARACTERISTICS OF NATURAL CIRCULATION LOOP AT WATER AND FC-72 BOILING UNDER ATMOSPHERIC PRESSURE .....</b>	<b>112</b>
<i>O N Kaban'Kov, L A Sukomel, N O Zubov, V V Yagov</i>	
<b>MOLECULAR DYNAMIC APPROACH TO THE STUDY OF THE INTENSE HEAT AND MASS TRANSFER PROCESSES ON THE VAPOR-LIQUID INTERFACE .....</b>	<b>121</b>
<i>V Yu Levashov, P K Kamenov</i>	
<b>RESEARCH WETTING AND LEIDENFROST EFFECTS ON STRUCTURED SURFACES IN CONTACT WITH WATER.....</b>	<b>127</b>
<i>I A Khaziev, A V Dedov, S D Fedorovich</i>	
<b>BOILING OF MULTICOMPONENT WORKING FLUIDS USED IN REFRIGERATION AND CRYOGENIC SYSTEMS .....</b>	<b>133</b>
<i>V I Mogorychny, A S Dolzhikov</i>	
<b>THERMOCAPILLARY RIVULETS IN THE UNIFORMLY HEATED LIQUID FILM .....</b>	<b>146</b>
<i>S P Aktershev, S V Alekseenko</i>	
<b>NUMERICAL MODELING OF STOKES FLOWS OVER A SUPERHYDROPHOBIC SURFACE CONTAINING GAS BUBBLES .....</b>	<b>152</b>
<i>A I Ageev, I V Golubkina, A N Osiptsov</i>	
<b>AN EXPERIMENTAL STUDY OF CRITICAL HEAT FLUX OF FLOW BOILING IN MINICHANNELS AT HIGH REDUCED PRESSURE.....</b>	<b>158</b>
<i>A V Belyaev, A V Dedov, A N Varava, A T Komov</i>	
<b>OBTAINING OF ANALYTICAL RELATIONS FOR HYDRAULIC PARAMETERS OF CHANNELS WITH TWO PHASE FLOW USING OPEN CFD TOOLBOX .....</b>	<b>167</b>
<i>E Varseev</i>	
<b>TWO-PHASE FLOWS IN THE FORMED TORNADO FUNNEL.....</b>	<b>174</b>
<i>O A Sinkevich, A A Bortsova</i>	
<b>INVESTIGATION BY ELECTROCONTACT METHOD OF INTERACTION OF WATER WITH HOT SURFACE IN FILM AND TRANSITION BOILING REGIMES .....</b>	<b>181</b>
<i>Y P Ivochkin, K G Kubrikov, O A Sinkevich, Y A Zeigarnik</i>	
<b>NUMERICAL MODELING OF THE WAVES EVOLUTION GENERATED BY THE DEPRESSURIZATION OF THE VESSELS CONTAINING A SUPERCRITICAL PARAMETERS COOLANT .....</b>	<b>187</b>
<i>Maksim V. Alekseev, Ivan S. Vozhakov, Sergey I. Lezhmin, Nikolay A. Pribaturin</i>	
<b>MODELING OF INERTIAL-ADMIXTURE ACCUMULATION ZONES IN VORTEX RING-LIKE FLOWS BY FULLY LAGRANGIAN METHOD .....</b>	<b>193</b>
<i>N A Lebedeva, A N Osiptsov</i>	
<b>HEAT AND MASS TRANSFER ARE IN THE INTERACTION OF MULTI-PULSED SPRAY WITH VERTICAL SURFACES IN THE REGIME OF EVAPORATIVE COOLING .....</b>	<b>199</b>
<i>P N Karpov, A D Nazarov, A F Serov, V I Terekhov</i>	
<b>EXPERIMENTAL STUDY OF THE STRUCTURE OF VAPOR PHASE DURING BOILING OF R134A ON HEAT EXCHANGE SURFACES OF HEAT PUMP .....</b>	<b>204</b>
<i>D A Ustinov, A A Sukhikh, D V Sidenkov, V A Ustinov</i>	
<b>HEAT TRANSFER AT BOILING OF REFRIGERANTS IN CHANNELS WITH TWISTED TAPE INSERT .....</b>	<b>212</b>
<i>A V Shishkin, S E Tarasevich, A B Yakovlev</i>	
<b>HEAT TRANSFER AT NUCLEATE BOILING OF NON-AZEOTROPIC MIXTURES .....</b>	<b>218</b>
<i>N N Mezentseva, V A Mukhin, I V Mezentsev</i>	
<b>HEAT TRANSFER AT BOILING OF R114/R21 REFRIGERANTS MIXTURE FILM ON MICROSTRUCTURED SURFACES.....</b>	<b>222</b>
<i>O A Volodin, N I Pecherkin, A N Pavlenko, N N Zubkov, Yu L Bityutskaya</i>	
<b>NUMERICAL SIMULATION OF THE HEAT TRANSFER AT COOLING A HIGH-TEMPERATURE METAL CYLINDER BY A FLOW OF A GAS-LIQUID MEDIUM.....</b>	<b>230</b>
<i>S S Makarov, A M Lipanov, A I Karpov</i>	
<b>NUMERICAL SIMULATION OF VELOCITY AND TEMPERATURE FIELDS IN NATURAL CIRCULATION LOOP .....</b>	<b>236</b>
<i>L A Sukomel, O N Kaban'Kov</i>	

## **2. HYDRODYNAMICS AND CONVECTION HEAT TRANSFER**

<b>THE EXPERIMENTAL DETERMINATION OF THE COEFFICIENT OF HYDRAULIC RESISTANCE OF A PERFORATED PLATE WITH A LAYER OF BALLS ADJOINING TO IT</b> .....	246
<i>Yu V Smorchkova, A N Varava, A V Dedov, A V Zakharenkov, A T Komov</i>	
<b>ASPECTS OF NUMERICAL MODELING OF MIXED CONVECTION OVER HEATED HORIZONTAL PLATE</b> .....	252
<i>Maxim N. Nikitin</i>	
<b>THE HEAT EXCHANGE OF DIFFERENT ATOMICITY GASES AT HIGH THERMAL LOADS</b> .....	259
<i>Y Y Pechenegov</i>	
<b>ABOUT NAVIER-STOKES EQUATION IN THE THEORY OF CONVECTIVE HEAT TRANSFER</b> .....	264
<i>M Y Davidzon</i>	
<b>CALCULATIONS OF AIR COOLER FOR NEW SUBSONIC WIND TUNNEL</b> .....	270
<i>A S Rtishcheva</i>	
<b>NUMERICAL INVESTIGATION OF AIR FLOW IN A SUPERSONIC WIND TUNNEL</b> .....	277
<i>S M Drozdov, A S Rtishcheva</i>	
<b>HYDRODYNAMICS AND HEAT TRANSFER IN COOLED ACTIVE LASER MIRRORS</b> .....	286
<i>Yu Shanin, A Chernykh</i>	
<b>HEAT TRANSFER IN PULSATING FLOWS IN THE CHANNELS WITH PRESSURE GRADIENT</b> .....	293
<i>I A Davletshin, O A Dushina, N I Mikheev, A A Paereliy</i>	
<b>INFLUENCE OF UPSTREAM PIPE BENDS ON THE TURBULENT HEAT AND MASS TRANSFER IN T-JUNCTIONS</b> .....	298
<i>M S Gritskevich, A V Garbaruk</i>	
<b>STUDY OF THERMAL AND HYDRAULIC EFFICIENCY OF SUPERSONIC TUBE OF TEMPERATURE STRATIFICATION</b> .....	304
<i>Anna A. Tsynaeva, Maxim N. Nikitin, Ekaterina A. Tsynaeva</i>	
<b>INFLUENCE OF SCALE DEPOSIT AND ITS THICKNESS ON THE HEAT EXCHANGER OPERATIONAL EFFICIENCY</b> .....	309
<i>E V Kocharyan, E D Skiba, E Y Levina</i>	
<b>PULSATING FLOW PAST A TUBE BUNDLE</b> .....	312
<i>V M Molochnikov, N I Mikheev, T A Vazeev, A A Paereliy</i>	
<b>THE CONDITIONS OF SIMILARITY AND GENERALIZED DEPENDENCES FOR CALCULATING CONVECTIVE HEAT TRANSFER IN SUPERCRITICAL PRESSURE COOLANTS</b> .....	318
<i>V I Deev, V S Kharitonov, A N Churkin, A M Baisov</i>	
<b>SIMULATION OF HIGH-SPEED NONEQUILIBRIUM HETEROGENEOUS TURBULENT FLOWS WITH PHASE TRANSITION</b> .....	324
<i>A M Molchanov, D S Yanyshv, L V Bykov</i>	
<b>NUMERICAL SIMULATION OF FROSTING ON WAVY FIN-AND-TUBE HEAT EXCHANGER SURFACES</b> .....	332
<i>Q Ma, X M Wu, F Chu, B Zhu</i>	
<b>THERMOPHYSICAL FUNDAMENTALS OF CYCLONIC RECIRCULATING HEATING DEVICES</b> .....	337
<i>S V Karpov, A A Zagoskin</i>	
<b>GAS DYNAMICS AND MIXTURE FORMATION IN SWIRLED FLOWS WITH PRECESSION OF AIR FLOW</b> .....	344
<i>V V Tretyakov, A A Sviridenkov</i>	
<b>ESTIMATION OF FRICTION LOSS UNDER FORCED FLOW PULSATIONS IN A CHANNEL WITH DISCRETE ROUGHNESS ELEMENTS</b> .....	349
<i>I A Davletshin, O A Dushina, N I Mikheev, S A Kolchin</i>	
<b>RESEARCH OF HEAT TRANSFER OF STAGGERED HORIZONTAL BUNDLES OF FINNED TUBES AT FREE AIR CONVECTION</b> .....	355
<i>A V Novozhilova, Z G Maryna, A V Samorodov, E A Lvov</i>	
<b>CHARACTERISTIC FEATURES OF HEAT TRANSFER IN INHOMOGENEOUS SUPERCRITICAL FLUID</b> .....	361
<i>A Gorbunov, V Emelyanov, A Lednev</i>	
<b>THE PULSATIONS OF BOUNDARY CONDITIONS – FACTOR OF THE RAPID WEAR ON HEAT EXCHANGE SURFACES IN HETEROGENEOUS DISPERSED FLOWS</b> .....	367
<i>V P Khodunkov</i>	
<b>INVESTIGATION OF THE TAYLOR VORTICES IN ELECTROVORTEX FLOW</b> .....	374
<i>D A Vinogradov, Yu P Ivochkin, I O Teplyakov</i>	

<b>CONSTRUCTION ASYMPTOTIC SOLUTION WHILE STUDYING ELECTROVORTEX FLOW IN HEMISPHERICAL CONTAINER USING STOKES APPROXIMATION .....</b>	<b>378</b>
<i>E A Mikhailov, I O Teplyakov</i>	
<b>BOUNDARY LAYER AND FUNDAMENTAL PROBLEMS OF HYDRODYNAMICS (COMPATIBILITY OF A LOGARITHMIC VELOCITY PROFILE IN A TURBULENT BOUNDARY LAYER WITH THE EXPERIENCE VALUES).....</b>	<b>383</b>
<i>A E Zaryankin</i>	
<b>DETERMINATION OF THE TURBULENCE INTEGRAL MODEL PARAMETERS FOR A CASE OF A COOLANT ANGULAR FLOW IN REGULAR ROD-BUNDLE .....</b>	<b>389</b>
<i>M V Bayaskhalanov, M N Vlasov, A S Korsun, I G Merinov, M Ph Philippov</i>	
<b>NUMERICAL SIMULATION OF DBD-ACTUATOR INFLUENCE ON DUCT FLOW .....</b>	<b>393</b>
<i>P A Semenev, P D Toktaliev, D E Pudovikov</i>	
<b>EXPERIMENTAL SETUP FOR GENERATION AND CONTROL OF SINUSOIDAL PULSATILE CHANNEL FLOW .....</b>	<b>398</b>
<i>N I Mikheev, A E Goltsman, A A Paereliy, I I Saushin</i>	
<b>VELOCITY DISTRIBUTION IN A TURBULENT FLOW NEAR A ROUGH WALL .....</b>	<b>404</b>
<i>A S Korsun, M I Pisarevsky, V N Fedoseev, M V Kreps</i>	
<b>NUMERICAL SIMULATION OF TURBULENT FLOW AND HEAT TRANSFER IN TUBE UNDER INJECTION OF GAS THROUGH PERMEABLE WALLS .....</b>	<b>414</b>
<i>M. S. Makarova, V. G. Lushchik</i>	
<b>DETERMINATION OF HYDRAULIC RESISTANCE OF ROUGH ANNULAR CHANNELS BY RESISTANCE OF ROUGH PIPES .....</b>	<b>419</b>
<i>A S Korsun, M I Pisarevsky, V N Fedoseev, M V Kreps</i>	
<b>INVESTIGATION OF THE MECHANISM OF GENERATION OF ACOUSTIC OSCILLATIONS INSIDE COMPLICATED CURVILINEAR CHANNELS .....</b>	<b>424</b>
<i>O V Mitrofanova, A S Bayramukov, A V Fedorinov</i>	
<b>RESEARCH OF THE INFLUENCE OF INTENSIFICATION OF HEAT TRANSFER ON DISTRIBUTION OF TEMPERATURE IN THE ACTIVE CORE OF THE GAS COOLED NUCLEAR REACTOR OF THE «GT-MHR» PROJECT .....</b>	<b>429</b>
<i>V S Kuzevanov, S K Podgorny</i>	
<b>SPECIFIC CHARACTER OF HEAT TRANSFER UNDER PULSATING LAMINAR FLOW IN RECTANGULAR CHANNELS WITH DIFFERENT BOUNDARY CONDITIONS ON THE WALLS .....</b>	<b>436</b>
<i>E P Valyeva, M S Purdin</i>	
<b>AZIMUTHAL MHD STIRRING OF METAL IN VESSELS WITH CROSS-SECTIONS OF DIFFERENT CONFIGURATION.....</b>	<b>443</b>
<i>R R Siraev, S Yu Khripchenko</i>	
<b>BUOYANCY EFFECTS IN VERTICAL RECTANGULAR DUCT WITH COPLANAR MAGNETIC FIELD AND SINGLE SIDED HEAT LOAD .....</b>	<b>451</b>
<i>P I Kostichev, I I Poddubnyi, N G Razuvanov</i>	
<b>PECULIARITIES OF HEAT TRANSFER AT THE LIQUID METAL FLOW IN A VERTICAL CHANNEL IN A COPLANAR MAGNETIC FIELD .....</b>	<b>457</b>
<i>N G Razuvanov, I I Poddubnyi, P V Kostychev</i>	
<b>INFLUENCE OF THERMO-GRAVITATIONAL CONVECTION IN THE FLOW OF LIQUID METAL IN A HORIZONTAL PIPE WITH A LONGITUDINAL MAGNETIC FIELD .....</b>	<b>463</b>
<i>R Akhmedagaev, Y Listratov</i>	
<b>ON BOUNDARY CONDITIONS IN LIQUID SODIUM CONVECTIVE EXPERIMENTS .....</b>	<b>467</b>
<i>I Kolesnichenko, R Khalilov, A Teimurazov, P Frick</i>	
<b>NUMERICAL SIMULATIONS OF CONVECTION IN THE TITANIUM REDUCTION REACTOR .....</b>	<b>473</b>
<i>A Teimurazov, P Frick, N Weber, F Stefani</i>	
<b>FEASIBILITY ANALYSIS OF A HYDROGEN BACKUP POWER SYSTEM FOR RUSSIAN TELECOM MARKET .....</b>	<b>479</b>
<i>V I Borzenko, D O Dumikov</i>	
<b>ON THE QUESTION OF GAS-DYNAMIC TEMPERATURE STRATIFICATION DEVICE OPTIMIZATION .....</b>	<b>485</b>
<i>Dmitry Khazov</i>	
<b>INFLUENCE OF THE PARAMETERS OF SUPERSONIC FLOW ON EFFECTIVENESS OF GAZDYNAMIC METHOD OF TEMPERATURE SEPARATION.....</b>	<b>494</b>
<i>A G Zditovets, Yu A Vinogradov, M M Strongin, N A Kiselev</i>	
<b>EXPERIMENTAL RESEARCH OF SHOCK WAVE PROCESSES INFLUENCE ON MACHINELESS GAS FLOW ENERGY SEPARATION EFFECT .....</b>	<b>500</b>
<i>Y A Vinogradov, A G Zditovets, A I Leontiev, S S Popovich, M M Strongin</i>	

<b>STRUCTURE OF A FREE CONVECTIVE FLOW OVER A HORIZONTAL HEATED SURFACE UNDER CONDITIONS OF CONJUGATE HEAT TRANSFER.....</b>	<b>505</b>
<i>E F Khrapunov, I V Potechin, Y S Chumakov</i>	
<b>A MODEL FOR DESCRIPTION OF THE PRESSURE FIELD ON A PLATE AS THE VORTEX RING PASSES .....</b>	<b>512</b>
<i>P A Kuibin</i>	
<b>THE EXPERIMENTAL FACILITY FOR INVESTIGATION OF MHD HEAT TRANSFER IN PERSPECTIVE COOLANTS IN NUCLEAR ENERGETICS. ....</b>	<b>518</b>
<i>B M Batenin, I A Belyaev, D A Birukov, P G Frick, I S Nikitina, S P Manchkha, N Yu Pyatnitskaya, N G Razuvanov, E V Sviridov, V G Sviridov</i>	
<b>HEAT EXCHANGE IN "HUMAN BODY - THERMAL PROTECTION - ENVIRONMENT" SYSTEM.....</b>	<b>525</b>
<i>I V Khromova</i>	
<b>CAVITATION PROCESSES AS A PREPARATION TECHNOLOGY BASIS FOR BURNING OF COMMON AND ALTERNATIVE ENERGY FUELS.....</b>	<b>530</b>
<i>V I Kormilitsyn, S R Ganiev, O V Shmyrkov</i>	
<b>THE PROBLEMS OF USING A HIGH-TEMPERATURE SODIUM COOLANT IN NUCLEAR POWER PLANTS FOR THE PRODUCTION OF HYDROGEN AND OTHER INNOVATIVE APPLICATIONS .....</b>	<b>540</b>
<i>A. P. Sorokin, V. V. Alexeev, Ju. A. Kuzina, M. A. Kononov</i>	
<b>LARGE EDDY SIMULATIONS OF AIR FLOW IN A VERTICAL HEATED PIPE USING UNSTRUCTURED CARTESIAN GRIDS WITH LOCAL REFINEMENT .....</b>	<b>553</b>
<i>V I Artemov, M V Makarov, K B Minko, G G Yankov</i>	

### **3. MEASUREMENT METHODS AND INSTRUMENTATIONS**

<b>THE PARTICULAR USE OF PIV METHODS FOR THE MODELLING OF HEAT AND HYDROPHYSICAL PROCESSES IN THE NUCLEAR POWER PLANTS .....</b>	<b>562</b>
<i>D A Sergeev, A A Kandaurov, Yu I Troitskaya</i>	
<b>RESEARCH OF THE CONVECTIVE HEAT EXCHANGE OF RELATIVELY LONG CYCLONE CHAMBER WITH USE GRADIENT HEAT FLUX SENSORS .....</b>	<b>569</b>
<i>D A Onokhin, E N Saburov, A N Orekhov</i>	
<b>PROBLEM ASPECTS OF HIGH TEMPERATURE REFERRAL METROLOGY .....</b>	<b>574</b>
<i>V P Khodunkov</i>	
<b>VALIDATION OF SIV MEASUREMENTS OF TURBULENT CHARACTERISTICS IN THE SEPARATION REGION.....</b>	<b>581</b>
<i>N S Dushin, N I Mikheev, O A Dushina, D I Zaripov, A K Aslaev</i>	
<b>ESTIMATING OF HIGHER ORDER VELOCITY MOMENTS AND THEIR DERIVATIVES IN BOUNDARY LAYER BY SMOKE IMAGE VELOCIMETRY .....</b>	<b>587</b>
<i>N. I. Mikheev, A. E. Goltsman, I. G. Salekhova, I. I. Saushin</i>	
<b>ESTIMATING OF TURBULENT VELOCITY FLUCTUATIONS IN BOUNDARY LAYER WITH PRESSURE GRADIENT BY SMOKE IMAGE VELOCIMETRY.....</b>	<b>592</b>
<i>N I Mikheev, A E Goltsman, I I Saushin</i>	
<b>CAPABILITIES OF OPTICAL SIV TECHNIQUE IN MEASUREMENTS OF FLOW VELOCITY VECTOR FIELD DYNAMICS .....</b>	<b>597</b>
<i>N I Mikheev, N S Dushin, I I Saushin</i>	
<b>COMPREHENSIVE STUDY OF FLOW AND HEAT TRANSFER AT THE SURFACE OF CIRCULAR COOLING FIN.....</b>	<b>603</b>
<i>V Yu Mityakov, M A Grekov, A A Gusakov, S Z Sapozhnikov, V V Seroshtanov, A V Bashkatov, A N Dymkin, A V Pavlov, O A Milto, K S Kalmykov</i>	
<b>GRADIENT HEAT FLUX MEASUREMENT AS MONITORING METHOD FOR THE DIESEL ENGINE .....</b>	<b>609</b>
<i>S Z Sapozhnikov, V Yu Mityakov, A V Mityakov, A V Vintsarevich, A V Pavlov, I D Nalyotov</i>	
<b>INVESTIGATION OF HEAT AND MASS TRANSFER PROCESSES BY THE METHOD OF STRUCTURED LASER RADIATION CAUSTICS.....</b>	<b>615</b>
<i>A V Vedyashkina, B S Rinkevichyus</i>	
<b>FEATURES OF THE FORMATION OF THE MEASURING VOLUME OF THE LASER DOPPLER ANEMOMETER IN TRANSPARENT OPTICALLY INHOMOGENEOUS ENVIRONMENT .....</b>	<b>621</b>
<i>B S Rinkevichyus, A V Tikhomirova, A V Tolkachev</i>	

#### **4. MASS TRANSFER AND CHEMICAL REACTIONS**

<b>EXPERIMENTAL-THEORETICAL APPROACH TO CARBON MONOXIDE DENSITY CALCULATION AT THE INCIPIENT STAGE OF THE FIRE INDOORS</b> .....	627
<i>S V Puzach, E V Suleykin, R G Akperov, T D Nguyen</i>	
<b>MATHEMATICAL MODELS OF HEAT IGNITION AND EXPLOSION CONSIDERING LOCAL NON-EQUILIBRIUM OF PROCESSES</b> .....	634
<i>V. A. Kudinov, A. V. Eremin, V. V. Zhukov</i>	
<b>THE INVESTIGATION OF MOVEMENT CONDITIONS OF PARTICLES BINARY MIXTURES IN CHEMICAL LOOPING COMBUSTION OF SOLID FUELS</b> .....	638
<i>G Ryabov, O Folomeev, I Dolgushin</i>	
<b>HYDRODYNAMICS AND MASS TRANSFER DEAERATION OF WATER ON THERMAL POWER PLANTS WHEN USED NATURAL GAS AS A DESORBING AGENT</b> .....	643
<i>V I Sharapov, E V Kudryavtseva</i>	
<b>ANALYTICAL SOLUTION OF HYDRODYNAMICS AND HEAT EXCHANGE PROBLEM IN A POROUS RECTANGULAR CHANNEL FOR THERMAL BOUNDARY CONDITIONS OF THE SECOND KIND</b> .....	649
<i>D A Kononov, V I Ryazhskikh, I G Drozdov</i>	
<b>NUMERICAL INVESTIGATIONS OF HALINE-CONVECTIVE FLOWS OF SALINE GROUNDWATER</b> .....	659
<i>E Soboleva</i>	
<b>NUMERICAL SIMULATION OF HALINE CONVECTION IN GEOTHERMAL RESERVOIRS</b> .....	665
<i>E Soboleva</i>	
<b>INFLUENCE OF TURBULENT FLUCTUATIONS ON NON-EQUILIBRIUM CHEMICAL REACTIONS IN THE FLOW</b> .....	674
<i>A M Molchanov, D S Yanyshv, L V Bykov</i>	
<b>INFLUENCE OF CHANNEL GEOMETRICAL PROPERTIES AND TURBULENCE ON PROPELLANT IGNITION IN HYPERSONIC RAMJET COMBUSTION CHAMBER</b> .....	681
<i>Alexander M Molchanov, Dmitry S Yanyshv, Leonid V Bykov</i>	
<b>FEATURES OF A MATHEMATICAL MODEL OF HEAT TRANSFER IN A VACUUM RESISTANCE FURNACE</b> .....	688
<i>K. Yu. Litvintsev, K. A. Finnikov, E. B. Kharlamov</i>	
<b>EXPERIMENTAL RESEARCH OF LOW-TEMPERATURE THROTTLING REFRIGERATOR FOR CRYOCONSERVATION OF MEDICAL AND BIOLOGICAL OBJECTS</b> .....	694
<i>E G Bychkov, Y V Samokhvalov, B A Makarov, V I Yakovlev</i>	
<b>NUMERICAL SIMULATION OF SUBMICRON PARTICLES FORMATION BY CONDENSATION AT COALS BURNING</b> .....	701
<i>N M Kortsenshteyn, L V Petrov</i>	
<b>MATHEMATICAL MODEL OF FISCHER-TROPSCH CATALYST PELLET WITH POINTED CENTERS OF SYNTHESIS</b> .....	707
<i>I V Derevich, A Yu Fokina</i>	
<b>STUDY OF HEAT AND MASS TRANSFER PROCESSES IN OBTAINING FRESH WATER FROM ATMOSPHERIC AIR</b> .....	727
<i>Y V Koroleva, A S Magomadov</i>	
<b>EXPERIMENTAL AND NUMERICAL STUDY OF THE PECULIARITIES OF THE MULTICOMPONENT GAS MIXTURES SEPARATION UNDER NATURAL GRAVITY CONVECTION</b> .....	738
<i>V N Kossov, S A Krasikov, O V Fedorenko, D B Zhakebaev, M K Asembaeva</i>	
<b>THE CALCULATING STUDY OF THE MOISTURE TRANSFER INFLUENCE AT THE TEMPERATURE FIELD IN A POROUS WET MEDIUM WITH INTERNAL HEAT SOURCES</b> .....	747
<i>V S Kuzevanov, A B Garyaev, G S Zakozhurnikova, S S Zakozhurnikov</i>	
<b>EXPERIMENTAL INVESTIGATIONS OF ADSORPTION CHARACTERISTICS AND POROSITY OF ACTIVATED METAL HYDRIDE POWDERS</b> .....	754
<i>A N Kazakov, I A Romanov, V N Kuleshov, D O Dunikov</i>	
<b>NONSTATIONARY HEAT AND MASS TRANSFER IN THE MULTILAYER BUILDING CONSTRUCTION WITH VENTILATION CHANNELS</b> .....	759
<i>N S Kharkov</i>	
<b>INVESTIGATION OF SOLID ORGANIC WASTE PROCESSING BY OXIDATIVE PYROLYSIS</b> .....	768
<i>O B Kolibaba, A I Sokolsky, R N Gabitov</i>	



<b>POWER EFFICIENCY IMPROVEMENTS OF THE INDUSTRIAL PROCESSES AT APPLICATION OF THERMOCHEMICAL RECUPERATION OF HEATH OF THE LEAVING GASES WITH USE OF MICROCHANNEL REACTORS</b> .....	775
<i>A V Tararykov, A B Garyaev</i>	
<b>INFLUENCE OF GEOMETRICAL NON-UNIFORMITIES OF LANI<sub>5</sub> METAL HYDRIDE BED ON ITS STRUCTURE AND HEAT AND MASS TRANSFER AT HYDROGEN ABSORPTION</b> .....	783
<i>D V Blinov, D O Dunikov, A N Kazakov, I A Romanov</i>	
<b>DESIGN OF STRUCTURE AND SIMULATION OF THE THREE-ZONE GASIFIER OF DENSE LAYER OF THE INVERTED PROCESS</b> .....	789
<i>R Sh Zagrutdinov, V N Negutorov, D G Maliykhin, M S Nikishanin, P K Senachin</i>	
<b>MATHEMATICAL MODELING AND OPTIMIZATION OF GASEOUS FUEL PROCESSING AS A BASIC TECHNOLOGY FOR LONG-DISTANCE ENERGY TRANSPORTATION: THE USE OF METHANOL AND DIMETHYL ETHER AS ENERGY CARRIERS*</b> .....	801
<i>E. A. Tyurina, A. S. Mednikov</i>	

## **5. CONDENSATION**

<b>INVESTIGATION OF THE EFFECT OF PRESSURE INCREASING IN CONDENSING HEAT-EXCHANGER</b> .....	812
<i>I B Murmanskii, K E Aronson, Yu M Brodov, L G Galperin, A. Yu. Ryabchikov, D V Brezgin</i>	

### **PART 2**

<b>THE DROPLETS CONDENSATE CENTERING IN THE VAPOUR CHANNEL OF SHORT LOW TEMPERATURE HEAT PIPES AT HIGH HEAT LOADS</b> .....	819
<i>A V Seryakov, S L Shakshin, A P Alekseev</i>	
<b>EXPERIMENTAL STUDY OF HEAT TRANSFER DURING PSEUDO-DROPWISE CONDENSATION OF WATER-ETHANOL AND WATER-ISOPROPANOL VAPOR MIXTURES ON A VERTICAL TUBE</b> .....	825
<i>A A Chindyakov, Yu B Smirnov, A A Vinogradov, E V Mikhailova</i>	
<b>HEAT TRANSFER DURING CONDENSATION OF STEAM FROM STEAM-GAS MIXTURES IN THE PASSIVE SAFETY SYSTEMS OF NUCLEAR POWER PLANTS</b> .....	834
<i>N M Portnova, Yu B Smirnov</i>	
<b>MEMBRANE-TYPE TOTAL HEAT EXCHANGER PERFORMANCE SIMULATION WITH CONSIDERATION OF ENTRANCE EFFECTS</b> .....	839
<i>J F Duan, J C Min</i>	
<b>INVESTIGATION THE EVAPORATION-CONDENSATION PROBLEM BY MEANS OF THE JOINT NUMERICAL SOLUTION OF THE BOLTZMANN KINETIC EQUATION AND INTERFACE MODELLING</b> .....	845
<i>I N Shiskova, A P Kryukov, V Yu Levashov</i>	
<b>GRADIENT HEAT FLUX MEASUREMENT WHILE RESEARCHING OF SATURATED WATER STEAM CONDENSATION</b> .....	851
<i>V Y Mityakov, S Z Sapozhnikov, E R Zainullina, A Y Babich, O A Milto, K S Kalmykov</i>	
<b>NUMERICAL STUDY OF BULK CONDENSATION IN LAMINAR FLOW DIFFUSION CHAMBER</b> .....	856
<i>V O Mayorov, A K Yastrebov</i>	
<b>A THERMOMECHANICAL MODEL FOR THE FRAGMENTATION OF A LIQUID METAL DROPLET COOLED BY WATER</b> .....	862
<i>Yu P Ivochkin, V P Monastyrskiy</i>	
<b>RECEIVING AND USE OF STREAMS OF MONODISPERSE ICE GRANULES FOR CLEANING AND DEACTIVATION OF SURFACES</b> .....	868
<i>A Boukharov, A Balashov, A Timohin, A Ivanov, B Holin</i>	
<b>HIGH SPEED CRYOGENIC MONODISPERSE TARGETS</b> .....	873
<i>A Boukharov, E Vishnevskii</i>	
<b>THE INFLUENCE OF SURFACE-ACTIVE AGENTS IN GAS MIXTURE ON THE INTENSITY OF JET CONDENSATION</b> .....	878
<i>Yv Yezhov, Vs Okhotin</i>	
<b>MODELING OF THERMAL PROCESSES DURING VAPOR DEPOSITION OF MATERIAL ON CURVILINEAR SURFACE</b> .....	885
<i>I Yu Savel'Eva, A V Zhuravskii</i>	

<b>RESEARCH ON HEAT EXCHANGE PROCESS IN AIRCRAFT AIR CONDITIONING SYSTEM.....</b>	891
<i>A V Chichindaev</i>	
<b>HEAT TRANSFER DURING PSEUDO-DROPWISE CONDENSATION OF WATER-ETHANOL VAPOR MIXTURE ON HORIZONTAL FINNED TUBES.....</b>	896
<i>A A Chindyakov, Yu B Smirnov, E V Mikhailova</i>	
<b>APPROXIMATE ESTIMATION OF THE THERMAL RESISTANCE OF THE TERMS IN THE PROCESS OF HEAT TRANSFER THROUGH THE FINNED WALL.....</b>	903
<i>O O Milman, G G Yankov, A V Kondratev, A V Ptakhin, V S Krylov, E J Korlyakova, A E Zhilin</i>	
<b>A NUMERICAL MODEL OF FORCED CONVECTION CONDENSATION ON A HORIZONTAL TUBE IN THE PRESENCE OF NONCONDENSABLES.....</b>	909
<i>K B Minko, G G Yankov, O O Milman, V S Krylov</i>	

## **6. HEAT TRANSFER ENHANCEMENT**

<b>THE CHOICE OF OPTIMUM PARAMETERS OF THE TUBES WITH INNER HELICAL FINNING.....</b>	918
<i>A V Schelchikov, I A Popov, A N Skrypnik, S A Sverchkov, Yu V Zhukova</i>	
<b>RECTANGULAR RIBS IN TURBULENT BOUNDARY LAYER ON THE INITIALLY SMOOTH SURFACE.....</b>	924
<i>V N Afanasiev, Dehai Kong</i>	
<b>OPTIMIZATION OF POROUS MICROCHANNEL HEAT EXCHANGER.....</b>	931
<i>N N Kozhukhov, D A Konovalov</i>	
<b>RESEARCH AND DEVELOPMENT OF ASYMMETRICAL HEAT TRANSFER AUGMENTATION METHOD IN RADIAL CHANNELS OF BLADES FOR HIGH TEMPERATURE GAS TURBINES.....</b>	936
<i>I V Shevchenko, A N Rogalev, I V Garanin, A N Vejera, V O Kindra</i>	
<b>INVESTIGATION INTO AERODYNAMIC AND HEAT TRANSFER OF ANNULAR CHANNEL WITH INNER AND OUTER SURFACE OF THE SHAPE TRUNCATED CONE AND SWIRLING FLUID FLOW.....</b>	942
<i>Yu L Leukhin, E V Pankratov, S V Karpov</i>	
<b>THE MATHEMATICAL MODEL STRUCTURAL-PARAMETRIC SYNTHESIS OF WORKING PROCESSES IN AN OXYGEN-METHANE STEAM GENERATOR WITH FLOW SWIRL.....</b>	948
<i>T S Timoshinova, D P Shmatov, A V Kretinin, I G Drozdov</i>	
<b>APPLICATION OF CYLINDRICAL, TRIANGULAR AND HEMISPHERICAL DIMPLES IN THE FILM COOLING TECHNOLOGY.....</b>	958
<i>A A Khalatov, N A Panchenko, S D Severin</i>	
<b>DEVELOPMENT OF COMPACT HEAT EXCHANGERS ACCORDING TO THE RESULTS STUDY OF THE REGULARITIES OF HEAT EXCHANGE ENHANCEMENT ENERGY SAVING.....</b>	964
<i>V Ya Vasilev</i>	
<b>KINEMATICS OF PULSATING FLOW IN THE ENTRY REGION OF THE CHANNEL WITH DISCRETE ROUGHNESS ELEMENTS.....</b>	970
<i>N S Dushin, N I Mikheev, A A Paereliy, I M Gazizov, R R Shakirov</i>	
<b>EFFECTIVENESS OF FINS FORMED BY DIMPLES IN THE FORM OF BALL SEGMENTS.....</b>	976
<i>E A Gabdrakhmanov, G N Afonin, V S Glazov</i>	
<b>EXPERIMENTAL INVESTIGATION OF THE INFLUENCE OF LARGE-SCALE VORTEX STRUCTURES ON HEAT TRANSFER AND DRAG ON A SMOOTH WALL.....</b>	982
<i>N. A. Kiselev, A. G. Zditovets, Yu. A. Vinogradov, M. M. Strongin</i>	
<b>INVESTIGATION OF HEAT TRANSFER ENHANCEMENT AND THERMAL RESISTANCE OF WEAKLY INCLINED THERMOSTABILIZER.....</b>	989
<i>A. V. Lavrikov, Ya. A. Kuzma-Kichta, Yu. P. Stefanov, I. F. Prokopenko, V. M. Zhukov, M. V. Shustov, N. A. Stenina, Yu. A. Levashov</i>	
<b>THE EVALUATION OF ENERGY EFFICIENCY OF CONVECTIVE HEAT TRANSFER SURFACES IN TUBE BUNDLES.....</b>	996
<i>B A Grigoriev, V A Pronin, V I Salohin, D V Sidenkov</i>	
<b>INNOVATIVE METHOD OF COOLING AND THERMOSTABILIZATION OF TOKAMAK ELEMENTS WITH CAPILLARY-POROUS STRUCTURES.....</b>	1003
<i>S V Mirnov, A T Komov, I E Lyublinski, A N Varava, A V Dedov, A V Zakharenkov, Y V Smorchkova</i>	
<b>INTENSIFICATION OF HEAT EXCHANGE BY METHOD OF INTERACTING FLOWS.....</b>	1009
<i>B Y Agishev, A N Varava, A V Dedov, A V Zakharenkov, A T Komov</i>	

## **7. HEATING SYSTEMS**

<b>IMPROVEMENT OF THE THERMAL AND MECHANICAL FLOW CHARACTERISTICS IN THE EXHAUST SYSTEM OF PISTON ENGINE THROUGH THE USE OF EJECTION EFFECT</b> .....	1014
<i>L V Plotnikov, B P Zhilkin, Yu M Brodov</i>	
<b>IMPROVING THE EFFICIENCY OF HEAT SUPPLY SYSTEMS ON THE BASIS OF PLANTS OPERATING ON ORGANIC RANKINE CYCLE</b> .....	1020
<i>I N Solomin, A Z Daminov, R A Sadykov</i>	
<b>ENERGY SAVING TECHNOLOGIES OF THE DECENTRALIZED VENTILATION OF BUILDINGS</b> .....	1025
<i>R Sh Mansurov, T A Rafalskaya</i>	
<b>CHALLENGES TO OVERCOME: ENERGY SUPPLY FOR REMOTE CONSUMERS IN THE RUSSIAN ARCTIC</b> .....	1033
<i>M O Morgunova, D A Solovyev</i>	
<b>INCREASING THE EFFICIENCY OF THE CONDENSING BOILER</b> .....	1039
<i>O N Zaytsev, E A Lapina</i>	
<b>THE STUDY OF THERMAL PROCESSES IN CONTROL SYSTEMS OF HEAT CONSUMPTION OF BUILDINGS</b> .....	1048
<i>E Tsynaeva, Tsynaeva A</i>	
<b>ABOUT ECONOMY OF FUEL AND ENERGY RESOURCES IN THE HOT WATER SUPPLY SYSTEM</b> .....	1053
<i>P V Rotov, A A Sivukhin, D A Zhukov, A V Zhukova</i>	
<b>IMPROVING URBAN DISTRICT HEATING SYSTEMS AND ASSESSING THE EFFICIENCY OF THE ENERGY USAGE THEREIN</b> .....	1063
<i>M E Orlov, V I Sharapov</i>	
<b>THE SOLUTION OF PRIVATE PROBLEMS FOR OPTIMIZATION HEAT EXCHANGERS PARAMETERS</b> .....	1069
<i>A Melekhin</i>	
<b>ALGORITHM OF DYNAMIC REGULATION OF A SYSTEM OF DUCT, FOR A HIGH ACCURACY CLIMATIC SYSTEM</b> .....	1080
<i>A A Arbatskiy, G N Afonina, V S Glazov</i>	
<b>MULTICRITERIA HIERARCHICAL ITERATIVE INTERACTIVE ALGORITHM FOR ORGANIZING OPERATIONAL MODES OF LARGE HEAT SUPPLY SYSTEMS</b> .....	1090
<i>T I Korotkova, V I Popova</i>	
<b>INCREASING EFFICIENCY OF TPP FUEL SUPPLY SYSTEM DUE TO LNG USAGE AS A RESERVE FUEL</b> .....	1094
<i>E V Zhigulina, V G Khromchenkov, J Mischner, Y V Yavorovsky</i>	
<b>RESEARCHING OF THE POSSIBILITY OF USING ABSORPTION HEAT EXCHANGERS FOR CREATING THE LOW RETURN TEMPERATURE HEAT SUPPLY SYSTEMS BASED ON CHP GENERATION</b> .....	1099
<i>Y V Yavorovsky, A S Malenkov, Y V Zhigulina, D O Romanov, S Y Kurzanov</i>	
<b>APPLICATION OF THERMOHYDRAULIC DISPATCHER IN LOW TEMPERATURE DISTRICT HEATING SYSTEMS FOR DECREASING HEAT CARRIER TRANSPORTATION ENERGY COST AND INCREASING RELIABILITY OF HEAT SUPPLY</b> .....	1107
<i>Y V Yavorovsky, D O Romanov, V V Sennikov, I A Sultanguzin, A S Malenkov, E V Zhigulina, A V Lulaev</i>	
<b>MATHEMATICAL MODELING OF THE PROCESS OF DETERMINING THE STANDARDS FOR PROCESS LOSSES IN THE TRANSFER OF THERMAL ENERGY OF THE COOLANT</b> .....	1113
<i>I G Akhmetova, N D Chichirova</i>	
<b>ESTIMATION OF THE EFFECTIVE HEATING SYSTEMS RADIUS AS A METHOD OF THE RELIABILITY IMPROVING AND ENERGY EFFICIENCY</b> .....	1120
<i>I G Akhmetova, N D Chichirova</i>	
<b>INCREASING THE EFFICIENCY OF THE CONDENSING BOILER</b> .....	1127
<i>On Zaytsev, Ea Lapina</i>	

## **8. NUCLEAR POWER PLANTS**

<b>FEATURES OF THE NUMERICAL SOLUTION OF THERMAL DESTRUCTION FUEL PINS PROBLEMS IN THE FAST REACTOR</b> .....	1136
<i>E. V. Usov, A. A. Butov, I. A. Klimonov, V. I. Chuhno, A. V. Nikolaenko, V. S. Zhdanov, N. A. Pribaturin, V. F. Strizhov</i>	

<b>DEVELOPMENT OF THE SYSTEM OF REACTOR THERMOPHYSICAL DATA ON THE BASIS OF ONTOLOGICAL MODELLING .....</b>	<b>1141</b>
<i>I A Chusov, P L Kirillov, G P Bogoslovskaya, L K Yunusov, N A Obysov, G E Novikov, V G Pronyaev, A O Erkimbaev, V Yu Zitserman, G A Kobzev, M S Trachtengerts, L R Fokin</i>	
<b>DEVELOPMENT OF THE TECHNOLOGY OF VORTEX DIAGNOSTICS TO IMPROVE THE SAFETY OF OPERATION OF NUCLEAR REACTORS .....</b>	<b>1152</b>
<i>O V Mitrofanova, O A Ivlev, I G Pozdeeva, D S Urtenov</i>	
<b>FINITE ELEMENT CODE FENIA VERIFICATION AND APPLICATION FOR 3D MODELLING OF THERMAL STATE OF RADIOACTIVE WASTE DEEP GEOLOGICAL REPOSITORY .....</b>	<b>1157</b>
<i>R A Butov, N I Drobyshesky, E V Moiseenko, U N Tokarev</i>	
<b>INVESTIGATION OF THE POSSIBILITY OF USING RESIDUAL HEAT REACTOR ENERGY .....</b>	<b>1163</b>
<i>R Z Aminov, V E Yurin, V N Bessonov</i>	
<b>OPTIMIZATION OF STEAM GENERATORS OF NPP WITH WWER IN OPERATION WITH VARIABLE LOAD .....</b>	<b>1169</b>
<i>V M Parchevskii, T E Shchederkina, V V Gur'Yanova</i>	
<b>THERMAL STATE OF A HEATING ELEMENT UNDER IMPULSE HEATING .....</b>	<b>1175</b>
<i>I V Kudinovich, M N Syraleva</i>	
<b>EFFICIENCY MARK OF THE TWO-PRODUCT POWER COMPLEX OF NUCLEAR POWER PLANT .....</b>	<b>1180</b>
<i>V A Khrustalev, V M Suchkov</i>	
<b>COMPARATIVE EFFICACY OF WAYS OF LONG-TERM USAGE OF START-UP BOILERS IN THE SCHEME OF NUCLEAR POWER PLANT .....</b>	<b>1186</b>
<i>V A Khrustalev, A A Simonyan</i>	
<b>OXIDATION INVESTIGATION OF CLADDING SPECIMENS FOR REGULAR AND ACCIDENT TOLERANT FUEL RODS UNDER LOCA CONDITIONS .....</b>	<b>1194</b>
<i>S S Bazyuk, I A Deryabin, D S Kiselev, Yu A Kuzma-Kichta, A A Mokrushin, N Ya Parshin, E B Popov, D M Soldatkin</i>	
<b>STUDIES OF BEHAVIOR OF THE FUEL COMPOUND BASED ON THE U-ZR MICRO-HETEROGENEOUS QUASIALLOY DURING CYCLIC THERMAL TESTS .....</b>	<b>1204</b>
<i>D. A. Zaytsev, V. M. Repnikov, D. M. Soldatkin, V. A. Solntsev</i>	
<b>SCIENTIFIC BASIS FOR MODELLING AND CALCULATION OF ACOUSTIC VIBRATIONS IN THE NUCLEAR POWER PLANT COOLANT .....</b>	<b>1212</b>
<i>K N Proskuryakov</i>	
<b>IDENTIFICATION OF SOURCES OF EXCITATION OF ACOUSTIC STANDING WAVES IN THE VVER-440 REACTORUNIT .....</b>	<b>1222</b>
<i>K N Proskuryakov, A I Fedorov, M V Zaporozhets</i>	
<b>EFFECT OF THE INITIAL COMPOSITION AND IRRADIATION ON PHASE COMPOSITION, TRANSFER COEFFICIENTS AND SOLID STATE SWELLING OF URANIUM-PLUTONIUM NITRIDE .....</b>	<b>1233</b>
<i>I A Deryabin, D Yu Lyubimov</i>	

## **9. EFFICIENCY ENHANCEMENT OF POWER ENGINEERING SYSTEMS**

<b>INCREASING EFFICIENCY OF CCP-BASED TPP WITH INJECTION OF DRY SATURATED STEAM FROM RECOVERY BOILER INTO REGENERATOR .....</b>	<b>1241</b>
<i>V V Shaposhnikov, B V Biryukov</i>	
<b>INCREASING SAFETY OF THERMAL AND NUCLEAR POWER STATIONS ENERGY EQUIPMENT BY REDUCING NOISE .....</b>	<b>1247</b>
<i>V. B. Tupov</i>	
<b>FLUID DYNAMICS PARAMETERS OF A HIGH TEMPERATURE EJECTOR FOR SOFC ANODE GAS RECIRCULATION .....</b>	<b>1253</b>
<i>Y V Volkova, M I Ershov, V A Munts</i>	
<b>ANALYSIS OF DEEP HEAT RECOVERY FROM FLUE GASES .....</b>	<b>1259</b>
<i>Y V Shatskikh, A I Sharapov, I G Byankin</i>	
<b>ADVERSE EFFECT OF WIND LOADS ON THE COOLING CAPACITY OF AN EVAPORATIVE COOLING TOWER AND A DEVICE FOR ITS REDUCTION .....</b>	<b>1265</b>
<i>G V Dashkov, A D Solodukhin</i>	
<b>USE OF INFRASTRUCTURE OF COMBINED HEAT AND POWER PLANT FOR UTILIZATION OF SNOW ON THE EXAMPLE OF ULYANOVSK .....</b>	<b>1272</b>
<i>I V Gubin, M M Zamaleev, V I Sharapov</i>	

<b>SYSTEM EFFECTIVENESS ANALYSIS OF COMBINED CYCLE COGENERATION PLANT</b> .....	1277
<i>M S Ankudinova, E A Larin, La Sandalova</i>	
<b>GAS TRANSMISSION SERVICES WITH THE COMBINED DRIVE AS MANAGED LOAD CONSUMERS IN REGIONS WITH THE HIGH SHARE OF NPP</b> .....	1284
<i>M. V. Novikova, V. A. Khroustalev</i>	
<b>ABOUT OPPORTUNITIES OF THE SHARING OF CITY INFRASTRUCTURE CENTRALIZED WARMLY - AND WATER SUPPLY</b> .....	1291
<i>M M Zamaleev, I V Gubin, V I Sharapov</i>	
<b>THERMODYNAMIC ANALYSIS OF ENGINEERING SOLUTIONS AIMED AT RAISING THE EFFICIENCY OF INTEGRATED GASIFICATION COMBINED CYCLE</b> .....	1295
<i>S I Gordeev, T F Bogatova, A F Ryzhkov</i>	
<b>THE DEVELOPMENT OF A HIGH TEMPERATURE AIR HEATING UNIT BASED ON THE EXTERNAL COMBUSTION FOR INTEGRATED GASIFICATION COMBINED CYCLE</b> .....	1302
<i>N V Valtsev, V A Mikula, A F Ryzhkov</i>	
<b>TECHNOLOGIES OF LOW-POTENTIAL HEAT UTILIZATION ON THERMAL POWER PLANTS</b> .....	1307
<i>E. V. Makarevich, E. N. Oleinikova, S. A. Sobolev, I. A. Vasil'Ev, E. M. Fedorova, M. V. Starchak</i>	
<b>IMPROVING THE EFFICIENCY OF GAS-LIQUID HIGH-PRESSURE CYCLONE SEPARATOR</b> .....	1313
<i>N. I. Mikheev, V. A. Fafurin, D. V. Kratirov, A. E. Goltsman, A. A. Paereliy, I. I. Saushin</i>	
<b>DEVELOPMENT AND RESEARCH OF STRUCTURAL AND TECHNOLOGICAL MODERNIZATION SCENARIOS OF POWER ENGINEERING IN POWER MARKET CONDITIONS</b> .....	1318
<i>E M Lisin</i>	
<b>ANALYSIS OF THE ADJUSTMENT RANGE IN THE UPS RUSSIA AND WAYS OF ITS IMPROVEMENT IN THE CREATION OF NEW POWER FACILITIES</b> .....	1324
<i>S S Beloborodov, A A Dudolin</i>	
<b>MODELING OF COMBINED HEAT AND POWER PLANT BASED ON A MULTI-STAGE GASIFIER AND INTERNAL COMBUSTION ENGINES OF VARIOUS POWER OUTPUTS</b> .....	1335
<i>G I Khudyakova, A N Kozlov, D A Svishchev</i>	
<b>GASKETED PLATE HEAT EXCHANGERS BREATHING EFFECT</b> .....	1341
<i>V D Lychakov, B F Balunov, S Gusev, A A Shcheglov, A S Matyash, K S Starukhina, A V Zaytsev</i>	
<b>EFFICIENCY OF LIQUID-JET HIGH-PRESSURE BOOSTER COMPRESSORS</b> .....	1347
<i>N I Mikheev, I A Davletshin, A N Mikheev, D V Kratirov, V A Fafurin</i>	
<b>THE WAYS TO IMPROVE THE EFFICIENCY OF BINARY COGENERATION PLANT OPERATION BY USE ADDITIONAL OF THE EXIT-GAS HEAT BEHIND THE RECOVERY BOILER</b> .....	1353
<i>S V Novichkov</i>	
<b>ESTIMATION TECHNIQUE OF CORRECTIVE EFFECTS FOR FORECASTING OF RELIABILITY OF THE DESIGNED AND OPERATED OBJECTS OF THE GENERATING SYSTEMS</b> .....	1360
<i>V N Truhanov, M M Sultanov</i>	
<b>THE ANALYSIS OF THE PROCESS IN THE COOLING TOWER WITH THE LOW EFFICIENCY</b> .....	1373
<i>A I Badriev, V N Sharifullin</i>	
<b>DESIGN STUDY ON THE EFFICIENCY OF THE THERMAL SCHEME OF POWER UNIT OF THERMAL POWER PLANTS IN HOT CLIMATES</b> .....	1380
<i>A Sedlov, Y Dorokhov, B Rybakov, A Nenashev</i>	
<b>COMBINED INSTALLATION OF ELECTRIC AND HEAT SUPPLY FOR CLIMATIC CONDITIONS OF IRAQ</b> .....	1386
<i>Osama Al Kaysi, D V Sidenkov</i>	
<b>THE EXTENSION OF THE OPERATIONAL RANGE OF COMBINED-CYCLE POWER PLANT WITH A TRIPLE-PRESSURE HEAT RECOVERY STEAM GENERATOR</b> .....	1400
<i>B D Teplov, V D Burov</i>	
<b>ESPECIALLY THE CHOICE AND USE OF WORKING SUBSTANCES IN POWER PLANTS OF SMALL CAPACITY</b> .....	1406
<i>A A Sukhikh, V A Milyutin, A M Lvova</i>	
<b>ANALYSIS OF THE ENERGY EFFICIENCY OF THE IMPLEMENTATION POWER ELECTRIC GENERATED MODULES IN THE CHS</b> .....	1415
<i>A A Sukhikh, V A Milyutin, A M Lvova</i>	
<b>NEW TO POWER EQUIPMENT DESIGN APPROACHES WITH ADDITIVE MANUFACTURING PROSPECTS</b> .....	1421
<i>O V Belova, M D Vulf</i>	

<b>INCREASE OF ENERGY EFFICIENCY IN THE LOW-PRESSURE HEATER OF PN-1100-25-6-1 TYPE</b> .....	1429
<i>V. I. Velichko, N. N. Trofimenko, V. A. Milyutin</i>	
<b>HYDROGEN-OXYGEN STEAM GENERATOR APPLICATIONS FOR INCREASING THE EFFICIENCY, MANEUVERABILITY AND RELIABILITY OF POWER PRODUCTION</b> .....	1434
<i>A I Schastlivtsev, V I Borzenko</i>	
<b>ACTUAL ISSUES OF INTRODUCTION OF CONTINUOUS EMISSION MONITORING SYSTEMS FOR CONTROL OF NEGATIVE IMPACT OF TPP TO ATMOSPHERIC AIR</b> .....	1439
<i>O E Kondrateva, P V Roslyakov, A M Borovkova, O A Loktionov</i>	
<b>THE OPTIMIZATION PROBLEMS OF CP OPERATION</b> .....	1446
<i>A M Kler, E L Stepanova, A S Maximov</i>	

## **10. COMBUSTION**

<b>CFD SIMULATION OF THE COMBUSTION PROCESS OF THE LOW-EMISSION VORTEX BOILER</b> .....	1453
<i>A A Chernov, P A Maryandyshev, E V Pankratov, V K Lyubov</i>	
<b>EMISSIONS OF SOOT PARTICLES FROM HEAT GENERATORS</b> .....	1459
<i>V K Lyubov, A N Popov, E I Popova</i>	
<b>REFRIGERANTS AND ENVIRONMENT</b> .....	1465
<i>O B Tsvetkov, Yu A Laptev</i>	
<b>PLYWOOD PRODUCTION WASTES TO ENERGY</b> .....	1468
<i>V K Lyubov, A N Popov</i>	
<b>FURNACE DEVICES AERODYNAMICS OPTIMIZATION FOR FUEL COMBUSTION EFFICIENCY IMPROVEMENT AND NITROGEN OXIDE EMISSION REDUCTION</b> .....	1475
<i>E P Volkov, V B Prokhorov, A M Arkhipov, S L Chernov, V S Kirichkov, A A Kaverin</i>	
<b>THE ATOMIZATION AND BURNING OF BIOFUELS IN THE COMBUSTION CHAMBERS OF GAS TURBINE ENGINES</b> .....	1486
<i>A I Maiorova, A Yu Vasil'Ev, A A Sviridenkov, O G Chelebyan</i>	
<b>ON COMPUTATION OF SOLID FUEL REGRESSION RATE IN RAMJET COMBUSTOR</b> .....	1492
<i>A V Razmyslov, L S Yanovskiy, P D Toktaliev</i>	
<b>STUDY ON COAL CHAR IGNITION BY RADIANT HEAT FLUX</b> .....	1498
<i>A G Korotkikh, K V Slyusarskiy</i>	
<b>IGNITION OF A DROPLET OF COMPOSITE LIQUID FUEL IN A VORTEX COMBUSTION CHAMBER</b> .....	1503
<i>T R Valiullin, K Yu Vershina, D O Glushkov, P A Strizhak</i>	
<b>IMPROVEMENT OF FIRE-TUBE BOILERS CALCULATION METHODS BY THE NUMERICAL MODELING OF COMBUSTION PROCESSES AND HEAT TRANSFER IN THE COMBUSTION CHAMBER</b> .....	1509
<i>I I Komarov, D M Rostova, A N Vejera</i>	
<b>A COMPREHENSIVE STUDY OF COMBUSTION PRODUCTS GENERATED FROM PULVERIZED PEAT COMBUSTION IN THE FURNACE OF BKZ-210-140F STEAM BOILER</b> .....	1517
<i>V A Kuzmin, I A Zagrai</i>	
<b>EXPERIMENTAL INVESTIGATION OF THE BURNING OF MIXED AND SYNTHETIC FUEL COUNTERFLOW BURNER MODULE</b> .....	1526
<i>V V Kononova, A I Gur'Yanov</i>	
<b>NUMERICAL INVESTIGATION ON BURNING STABILITY OF THE COAL-DUST METHANE-AIR MIXTURE IN A RECUPERATIVE BURNER</b> .....	1530
<i>A Yu Krainov, K M Moiseeva, D M Moiseev</i>	
<b>CFD-MODELING OF THE MULTISTAGE GASIFIER CAPACITY OF 30 KW</b> .....	1536
<i>A A Levin, A N Kozlov, D A Svishchev, I G Donskoy</i>	
<b>ENVIRONMENTAL AND ECONOMIC EVALUATION OF SELECTIVE NON-CATALYTIC REDUCTION OF NITROGEN OXIDES</b> .....	1542
<i>V M Parchevskii, T E Shchederkina, A O Proshina</i>	
<b>THE ECOLOGICAL AND ECONOMIC ASSESSMENT OF EFFICIENCY OF ENVIRONMENTAL TECHNOLOGIES FOR CHPP (COMBINED HEAT AND POWER PLANT)</b> .....	1548
<i>I A Rostunsova, S V Novichkov, O V Zakharov, A V Kochetkov</i>	
<b>THE USE OF FRACTIONATED FLY ASH OF THERMAL POWER PLANTS AS BINDER FOR PRODUCTION OF BRIQUETTES OF COKE BREEZE AND DUST</b> .....	1555
<i>E Yu Temnikova, A R Bogomolov, A A Lapin</i>	

<b>DISTINCTIVE FEATURES OF HIGH-ASH BITUMINOUS COALS COMBUSTION WITH LOW MILLING FINENESS IN FURNACE CHAMBERS WITH BOTTOM BLOWING .....</b>	<b>1560</b>
<i>N A Zroychikov, A A Kaverin, Ya A Biryukov</i>	
<b>INFLUENCE OF GAS TEMPERATURE ON IGNITION, BURNING AND EXTINCTION OF CARBON PARTICLES-GAS SUSPENSION .....</b>	<b>1568</b>
<i>S G Orlovskaya, O N Zuy, M V Liseanskaia</i>	
<b>A STUDY OF PYROLYSIS OF OIL SHALE OF THE LENINGRAD DEPOSIT BY SOLID HEAT CARRIER .....</b>	<b>1573</b>
<i>G Ya Gerasimov, V V Khaskhachikh, O P Potapov</i>	
<b>STATE-OF-THE-ART TECHNOLOGIES OF OIL SHALE THERMAL PROCESSING.....</b>	<b>1579</b>
<i>O P Potapov, V V Khaskhachikh, G Ya Gerasimov</i>	
<b>COMBUSTION IN SWIRLING FLOWS: A REVIEW.....</b>	<b>1584</b>
<i>N Syred, J M Beer</i>	
<b>NUMERICAL RESEARCH OF NITROGEN OXIDES FORMATION FOR JUSTIFICATION OF MODERNIZATION OF P-49 NAZAROVSKY STATE DISTRICT POWER PLANT BOILER ON THE LOW-TEMPERATURE SWIRL TECHNOLOGY OF BURNING.....</b>	<b>1589</b>
<i>A A Trichenko, A P Paramonov, V E Skouditskiy, R G Anoshin</i>	
<b>CHANGE OF BROWN COAL OXIDATION KINETIC CHARACTERISTICS BY PROMOTING ADDITIVES APPENDING IN THE FORM OF COPPER SALTS.....</b>	<b>1600</b>
<i>K B Larionov, I V Mishakov, A A Gromov, A V Zenkov</i>	
<b>THE COMPARATIVE ANALYSIS OF HEAT TRANSFER EFFICIENCY IN THE CONDITIONS OF FORMATION OF ASH DEPOSITS IN THE BOILER FURNACES, WITH TAKING INTO ACCOUNT THE CRYSTALLIZATION OF SLAG DURING COMBUSTION OF COAL AND WATER-COAL FUEL.....</b>	<b>1606</b>
<i>V V Salomatov, G V Kuznetsov, S V Syrodoy</i>	
<b>COMPACT COMBUSTOR INTEGRATED (CI) WITH COMPRESSOR AND TURBINE FOR PERSPECTIVE TURBOJET ENGINE .....</b>	<b>1612</b>
<i>V N Strokin, S A Volkov, V P Ljashenko, V I Popov, A N Startzev, R Z Nigmatullin, T V Shilova, U V Belikov</i>	
<b>MODELLING OF NITROGEN OXIDES DISTRIBUTION IN THE HEARTH OF GAS-FIRED INDUSTRIAL FURNACE.....</b>	<b>1618</b>
<i>S Zhubrin, V Glazov, S Guzhov</i>	
<b>INCREASE OF EFFICIENCY AND RELIABILITY OF LIQUID FUEL COMBUSTION IN SMALL-SIZED BOILERS .....</b>	<b>1626</b>
<i>P V Roslyakov, Yu V Proskurin, I L Ionkin</i>	

## **11. GAS-TURBINE PLANTS AND STEAM TURBINES**

<b>MATHEMATICAL MODELING OF THE STIRLING ENGINE IN TERMS OF APPLYING THE COMPOSITION OF THE POWER COMPLEX CONTAINING NON-CONVENTIONAL AND RENEWABLE ENERGY .....</b>	<b>1634</b>
<i>A M Gaponenko, A A Kagrananova</i>	
<b>STABILIZATION OF GAS TURBINE UNIT POWER.....</b>	<b>1642</b>
<i>I Dolotovskii, E Larin</i>	

## **PART 3**

<b>IMPROVEMENT OF STEAM TURBINE OPERATIONAL PERFORMANCE AND RELIABILITY WITH USING MODERN INFORMATION TECHNOLOGIES.....</b>	<b>1647</b>
<i>V I Brezgin, Yu M Brodov, A Yu Kultishev</i>	
<b>INVESTIGATION OF THERMAL ECONOMICITY OF THE TURBINE DURING OPERATION OF THE ENERGY BLOCK IN THE MODES WITH VARIABLE LOAD .....</b>	<b>1651</b>
<i>I A Rostunsova, S S Krivulin</i>	
<b>METHODS OF INCREASING THERMAL EFFICIENCY OF STEAM AND GAS TURBINE PLANTS .....</b>	<b>1656</b>
<i>A A Vasserman, M A Shutenko</i>	
<b>EJECTORS OF POWER PLANTS TURBINE UNITS EFFICIENCY AND RELIABILITY INCREASING.....</b>	<b>1666</b>
<i>K. E. Aronson, A. Yu. Ryabchikov, V. K. Kuptsov, I. B. Murmanskii, Yu. M. Brodov, N. V. Zhelonkin, S. I. Khaet</i>	

<b>IMPROVING THE RELIABILITY OF TECHNOLOGICAL SUBSYSTEMS EQUIPMENT FOR STEAM TURBINE UNIT IN OPERATION.....</b>	1673
<i>Yu. M. Brodov, B. E. Murmansky, R. T. Aronson</i>	
<b>ANALYSIS OF THE EFFECT OF CONSTRUCTION AND OPERATION OF THERMAL EXPANSION SYSTEM COMPOUNDS ON STEAM TURBINES RELIABILITY .....</b>	1680
<i>B. E. Murmansky, A. Yu. Sosnovsky, Yu. M. Brodov</i>	
<b>EVALUATION OF THE OPERATING RESOURCE OF THE MOST LOADED ROTOR ELEMENT OF THE ADDITIONAL STEAM TURBINE WITH STEAM-HYDROGEN OVERHEAT OF THE WORKING FLUID AT A NUCLEAR POWER STATION .....</b>	1688
<i>A N Bairamov</i>	
<b>STUDY OF DESIGN AND TECHNOLOGY FACTORS INFLUENCING GAS TURBINE BLADE COOLING.....</b>	1697
<i>I V Shevchenko, I V Garanin, A N Rogalev, V O Kindra, V P Khudyakova</i>	
<b>TURBINE BLADE PROFILE DESIGN METHOD BASED ON BEZIER CURVES .....</b>	1703
<i>R. A. Alexeev, V. A. Tishchenko, V. G. Gribin, I. Yu. Gavrilov</i>	
<b>APPLICATION OF ADDITIVE LASER TECHNOLOGIES IN THE GAS TURBINE BLADES DESIGN PROCESS.....</b>	1709
<i>I V Shevchenko, A N Rogalev, S K Osipov, N M Bychkov, I I Komarov</i>	
<b>EXPERIMENTAL STUDY OF THE EFFICIENCY OF STEAM INJECTION ON WET-STEAM TURBINE STATOR BLADE CASCADE .....</b>	1715
<i>S. V. Khomyakov, R. A. Alexeev, I. Y. Gavrilov, V. G. Gribin, A. A. Tishchenko, V. A. Tishchenko, V. V. Popov</i>	
<b>NEW TWO-TIER LOW PRESSURE TURBINE FOR HEAVY DUTY STEAM TURBINES.....</b>	1721
<i>A E Zaryankin, A N Rogalev, S K Osipov, N M Bychkov</i>	
<b>EXPERIMENTAL RESEARCH RESULTS OF THE ALUMINUM ALLOY EROSION WEAR AT VARIABLE PARAMETERS OF THE HIGH DROPLET IMPACT .....</b>	1727
<i>A F Mednikov, A B Tkhabisimov, O S Zilova, A A Burmistrov</i>	
<b>EXPERIMENTAL RESEARCH RESULTS OF SOLID PARTICLE EROSION RESISTANCE OF BLADE STEEL WITH PROTECTIVE COATING .....</b>	1733
<i>G V Kachalin, A F Mednikov, A B Tkhabisimov, L I Seleznev</i>	
<b>SIMULATION MODELLING FOR NEW GAS TURBINE FUEL CONTROLLER CREATION.....</b>	1737
<i>L E Vendland, V G Pribylov, Yu A Borisov, M A Arzamastsev, A A Kosoy</i>	
<b>IMPACT OF THE CLIMATE CHANGE ON THE PERFORMANCE OF THE STEAM AND GAS TURBINES IN RUSSIA .....</b>	1743
<i>E V Fedotova (Kasilova), V V Klimenko, A V Klimenko, A G Tereshin</i>	

## **12. WATER TREATMENT, WATER CHEMISTRY REGIMES OF TPP AND NPP**

<b>USING OF POURBAIX DIAGRAM FOR EVALUATION OF WATER CHEMISTRY RECOMMENDED FOR ULTRA-SUPERCRITICAL PARAMETER OF WATER COOLANT .....</b>	1749
<i>T I Petrova, E A Selivanov</i>	
<b>MEDIUM PRESSURE BOILER WATER CHEMISTRY OPTIMIZATION USING NEUTRALIZING AMINES MIXTURE REAGENT AMINAT™ PK-2 AT CEPP "BOROVICHI REFRATORIES PLANT" OF JSC "BKO" .....</b>	1756
<i>O V Guseva, M V Butakova, K A Orlov, S V Vinogradov, L S Pavlenko</i>	
<b>PROJECT DEVELOPMENT LABORATORIES ENERGY FUELS AND OILS BASED ON NRU "MPEI" .....</b>	1763
<i>I A Burakov, A Y Burakov, I S Nikitina, A M Khomenkov, A O Paramonova, Aung Khtoo Naing</i>	
<b>ECOLOGICALLY PURE SORBENTS FOR POWER SYSTEM OF MYANMAR.....</b>	1767
<i>I S Nikitina, Y A Moryganova, Ko Ko Maung, E A Arefeva</i>	
<b>COMPARISON CONTEMPORARY METHODS OF REGENERATION SODIUM-CATIONIC FILTERS .....</b>	1774
<i>I A Burakov, A Y Burakov, I S Nikitina, A E Verkhovsky, A S Ilyushin, S V Aladushkin</i>	
<b>THE DEVELOPMENT OF A NEUTRALIZING AMINES BASED REAGENT FOR MAINTAINING THE WATER CHEMISTRY FOR MEDIUM AND HIGH PRESSURES STEAM BOILERS .....</b>	1780
<i>M V Butakova, K A Orlov, O V Guseva</i>	
<b>DRYING AND HEAT DECOMPOSITION OF BIOMASS DURING THE PRODUCTION OF BIOCHAR.....</b>	1785
<i>V K Lyubov, E I Popova</i>	



<b>THE ANALYSIS OF THE SYSTEM OF SPECIAL WATER PURIFICATION OF BELOYARSKAYA NUCLEAR POWER PLANT UNIT BN-800 .....</b>	<b>1791</b>
<i>A I Vatsëva, I S Bibik</i>	
<b>CYCLE CHEMISTRY MONITORING SYSTEM AS MEANS OF IMPROVING THE RELIABILITY OF THE EQUIPMENT AT THE POWER PLANTS .....</b>	<b>1795</b>
<i>O V Yegoshina, V N Voronov, V O Yarovoy, N A Bolshakova</i>	
<b>CYCLE WATER CHEMISTRY BASED ON FILM FORMING AMINES AT POWER PLANTS: EVALUATION OF TECHNICAL GUIDANCE DOCUMENTS.....</b>	<b>1802</b>
<i>F V Dyachenko, T I Petrova</i>	
<b>EXPERIMENTAL RESEARCH OF THE IMPACT OF THE DOSING OF CHEMICAL REAGENTS ON THE DYNAMIC BEHAVIOR OF REGULATION SYSTEM OF CYCLE CHEMISTRY .....</b>	<b>1807</b>
<i>O V Yegoshina, N A Bolshakova</i>	
<b>THE POSSIBILITY OF USING UNDERGROUND CHLORIDE SODIUM BRINES IN THE TERRITORY OF THE CENTRAL FEDERAL DISTRICT TO IMPROVE THE EFFICIENCY, RELIABILITY AND SAFETY OF POWER EQUIPMENT OF TPPS.....</b>	<b>1812</b>
<i>A Y Burakov, I A Burakov, A E Verkhovsky, I S Nikitina</i>	
<b>ON THE MATTER OF THE RELIABILITY OF THE CHEMICAL MONITORING SYSTEM BASED ON THE MODERN CONTROL AND MONITORING DEVICES .....</b>	<b>1816</b>
<i>A V Andriushin, N S Dolbikova, S V Kiet, E I Merzlikina, I S Nikitina</i>	
<b>PHYSICAL MODELING OF STABILIZATION WATER PROCESSES OF REVERSE COOLING SYSTEM THE THERMAL POWER PLANT.....</b>	<b>1822</b>
<i>S M Vlasov, A A Chichirov, N D Chichirova, A A Filimonova, A S Vinogradov</i>	
<b>PROBLEMS OF RELIABILITY AND ECONOMY WORK OF THERMAL POWER PLANTS WATER TREATMENT BASED ON BAROMEMBRANE TECHNOLOGIES .....</b>	<b>1827</b>
<i>N D Chichirova, A A Chichirov, S R Saitov</i>	

### **13. AUTOMATIC CONTROL SYSTEMS FOR POWER ENGINEERING**

<b>EXTENDING THE APPLIED SOFTWARE IN THE CONTEMPORARY THERMAL POWER PLANTS FOR INCREASING THE INTELLIGENCE OF THE AUTOMATIC CONTROL SYSTEM.....</b>	<b>1832</b>
<i>G Krokhin, A Pestunov, E Arakelyan, V Mukhin</i>	
<b>PREDICTIVE TIME OPTIMAL ALGORITHM FOR A THIRD-ORDER DYNAMICAL SYSTEM WITH DELAY .....</b>	<b>1838</b>
<i>G A Pikina</i>	
<b>AN EXPERT SYSTEM FOR DIAGNOSTICS AND ESTIMATION OF STEAM TURBINE COMPONENTS CONDITION .....</b>	<b>1847</b>
<i>B. E. Murmanskyy, K. E. Aronson, Yu. M. Brodov</i>	
<b>INTELLECTUAL TECHNOLOGIES IN THE PROBLEMS OF THERMAL POWER ENGINEERING CONTROL: FORMALIZATION OF FUZZY INFORMATION PROCESSING RESULTS USING THE ARTIFICIAL INTELLIGENCE METHODOLOGY .....</b>	<b>1854</b>
<i>G Krokhin, A Pestunov</i>	
<b>APPLICATION OF THE TUNING ALGORITHM WITH THE LEAST SQUARES APPROXIMATION TO THE SUBOPTIMAL CONTROL ALGORITHM FOR INTEGRATING OBJECTS.....</b>	<b>1860</b>
<i>V F Kuzishchin, E I Merzlikina, Hoang Van Va</i>	
<b>EFFICIENCY IMPROVEMENT OF TECHNOLOGICAL PREPARATION OF POWER EQUIPMENT MANUFACTURING .....</b>	<b>1866</b>
<i>I A Milukov, A N Rogalev, V P Sokolov, I V Shevchenko</i>	
<b>ALTERNATIVE INTEGRATED CRITERIA OF QUALITY BY OPTIMIZATION OF PROCESSES IN CONTROL SYSTEMS .....</b>	<b>1873</b>
<i>V P Zverkov, Y N Petrochenko</i>	
<b>COMPARATIVE ANALYSIS OF FALSE DATA DETECTION METHODS AT POWER PLANTS ACS TP .....</b>	<b>1879</b>
<i>S V Mezin</i>	
<b>TECHNICAL AND ECONOMIC FEASIBILITY OF DEVELOPMENT INNOVATIVE TECHNOLOGICAL SOLUTIONS FOR EXPANSION THE ADJUSTMENT RANGE OF HIGH- POWER CCP.....</b>	<b>1887</b>
<i>E. K. Arakelyan, A. V. Andryushin, S. Y. Burtsev, K. A. Andryushin</i>	

<b>USE OF MODERN INFORMATION TECHNOLOGIES TO IMPROVE ENERGY EFFICIENCY OF THERMAL POWER PLANT OPERATION</b> .....	1894
<i>E. K. Arakelyan, A. V. Andryushin, V. R. Sabanin, S. V. Mezin, F. F. Pashchenko</i>	
<b>OPTIMIZATION OF OPERATING MODES OF THE EQUIPMENT ON THE EXAMPLE OF A CO-GENERATION THERMAL POWER PLANT</b> .....	1899
<i>A V Neklyudov, A V Andryushin, E K Arakelyan, K A Andryushin</i>	
<b>PROBLEMS OF COLLABORATIVE WORK OF THE AUTOMATED PROCESS CONTROL SYSTEM (APCS) AND THE ITS INFORMATION SECURITY AND SOLUTIONS.</b> .....	1903
<i>E K Arakelyan, A V Andryushin, S V Mezin, A A Kosoy, Ya V Kalinina, I S Khokhlov</i>	
<b>IDENTIFICATION OF THE ACTUAL STATE AND ENTITY AVAILABILITY FORECASTING IN POWER ENGINEERING USING NEURAL-NETWORK TECHNOLOGIES</b> .....	1907
<i>O M Protalinsky, I A Shcherbatov, P V Stepanov</i>	
<b>OPTIMIZATION OF CONTROLLED PROCESSES IN COMBINED-CYCLE PLANT (NEW DEVELOPMENTS AND RESEARCHES)</b> .....	1913
<i>Yu S Tverskoy, I K Muravev</i>	
<b>DEVELOPING OF METHOD FOR PRIMARY FREQUENCY CONTROL DROOP AND DEADBAND ACTUAL VALUES ESTIMATION</b> .....	1919
<i>A A Nikiforov, A G Chaplin</i>	
<b>EVALUATION POINTS OF THE COMPLEX FREQUENCY CHARACTERISTICS OF A DYNAMIC OBJECT USING PULSE TESTING IMPACT</b> .....	1927
<i>E S Antohina, D A Balarev, D V Vershinin, O S Kolosov, A V Fedorenko</i>	
<b>THE DETERMINATION OF OPTIMAL PARAMETERS OF FUZZY PI SUGENO CONTROLLER</b> .....	1932
<i>Y I Kudinov, I Yu Kudinov, A A Volkova, I S Durgarjan, F F Pashchenko</i>	
<b>OPTIMIZATION SETTINGS IN THE FUZZY COMBINED MAMDANI PID CONTROLLER</b> .....	1938
<i>Y I Kudinov, F F Pashchenko, A F Pashchenko, A Y Kelina, V A Kolesnikov</i>	
<b>IMITATIVE MODELING AUTOMATIC SYSTEM CONTROL OF STEAM PRESSURE IN THE MAIN STEAM COLLECTOR WITH THE INFLUENCE ON THE MAIN SERVOMOTOR STEAM TURBINE</b> .....	1944
<i>A. V. Andriushin, V. P. Zverkov, V. F. Kuzishchin, O. S. Ryzhkov, V. R. Sabanin</i>	

#### **14. PLASMA PHYSICS AND TECHNOLOGIES**

<b>INTERACTION OF HIGH-SPEED PLASMA JET WITH A PULSE OF POWERFUL MICROWAVE RADIATION</b> .....	1953
<i>A S Pashchina, V G Brovkin, N M Ryazanskiy</i>	
<b>THE STUDY OF THE PHYSICAL PROCESSES OF LOW-TEMPERATURE PLASMA FORMATION AND ITS EFFECTS ON METAL PRODUCT SURFACE</b> .....	1963
<i>B Brzhozovskii, Gestrin S, Martynov V, Zinina E</i>	
<b>CLEARING OF VENTILATING EMISSIONS IN LOW TEMPERATURE ENVIRONMENT OF PLASMA</b> .....	1971
<i>R Sh Mansurov, T A Rafalskaya</i>	
<b>ON THE INFLUENCE OF THE CONDENSED PARTICLES ON THE ABSORPTION PROPERTIES OF PLASMA CREATED BY ABLATION CONTROLLED ARC IN A CAPILLARY</b> .....	1978
<i>A S Pashchina, G E Valyano</i>	
<b>SOME ASPECTS OF MODELING OF THE TARGET COMPRESSION AND HEATING IN A MAGNETIC FIELD</b> .....	1990
<i>V V Kuzenov</i>	
<b>INNOVATIVE POTENTIAL OF PLASMA TECHNOLOGY</b> .....	1996
<i>V P Budaev</i>	
<b>NUMERICAL SIMULATION OF THE ARGON-HYDROGEN PLASMA FLOW IN THE CHANNEL OF RF INDUCTIVELY COUPLED PLASMA TORCH</b> .....	2002
<i>Yu. M. Grishin, Miao Long</i>	
<b>INVESTIGATION OF DEUTERIUM IMPLANTATION INTO BERYLLIUM SAMPLE BY ELECTRON ENERGY LOSS SPECTROSCOPY</b> .....	2007
<i>V P Afanas'Ev, A S Gryazev, P S Kaplya, M Köppen, O Yu Ridzel, N Yu Subbotin, P Hansen</i>	
<b>THE PLASMA DEVICE FOR THE HIGH-HEAT PLASMA TESTING OF REFRACTORY METALS AND INVENTING OF NEW HIGHLY POROUS MATERIALS</b> .....	2013
<i>V P Budaev, S D Fedorovich, Yu V Martynenko, M V Lukashevsky, M K Gubkin, A V Lazukin, A V Karpov, E A Shestakov</i>	
<b>OPTICAL SPECTRA OF COAL GASIFICATION PRODUCTS IN THE RF PLASMATRON</b> .....	2019
<i>S D Fedorovich, I A Burakov, A A Dudolin, A A Markov, Aung Khtoo Naing, Batsamboo Ulziy, D I Kavyrshin</i>	

<b>DEUTERIUM-LITHIUM PLASMA AS A SOURCE OF FUSION NEUTRONS</b> .....	2025
<i>A Yu Chirkov, V R Vesnin</i>	
<b>EQUIPMENT FOR THE DEPOSITION OF THIN FILMS OF CARBON IN THE CONDITIONS OF MAGNETRON SPUTTERING AND INFLUENCES OF RADIATION</b> .....	2029
<i>A. V. Kostanovskiy, A. A. Pronkin, M. G. Zeodinov, M. E. Kostanovskaya</i>	
<b>SPUTTERING LAYERS OF DIFFERENT MATERIALS ON TUNGSTEN SURFACE BY LIGHT IONS OF MEDIUM ENERGY BOMBARDMENT</b> .....	2033
<i>V V Manukhin</i>	
<b>POWERFUL HIGH-VOLTAGE AC PLASMA TORCHES FOR PLASMA-CHEMICAL APPLICATIONS</b> .....	2039
<i>A V Surov, S D Popov, V A Spodobin, E O Serba, Gh V Nakonechniy, A V Pavlov, A V Nikonov, D I Subbotin, N V Obroztsov</i>	
<b>MODERNIZATION OF THE ELECTRON ACCELERATOR "CALAMARY" FACILITY DIAGNOSTIC COMPLEX TO APPLY OPTICAL METHODS FOR PLASMA AND SHOCKWAVE PROCESSES INVESTIGATION</b> .....	2045
<i>S S Ananyev, B A Demidov, E D Kazakov, Yu G Kalinin, A A Kurilo, M G Strizhakov, A Yu Shashkov</i>	
<b>DEVELOPMENT OF THE NUMERICAL MODEL FOR EVALUATING THE TEMPERATURE FIELD AND THERMAL STRESSES IN STRUCTURAL ELEMENTS OF AIRCRAFTS</b> .....	2050
<i>V V Shumaev, V V Kuzenov</i>	
<b>APPLICATION OF COMPUTATIONAL METHODS TO ANALYSE AND INVESTIGATE PHYSICAL AND CHEMICAL PROCESSES OF HIGH-TEMPERATURE MINERALIZING OF CONDENSED SUBSTANCES IN GAS STREAM</b> .....	2062
<i>A Y Markelov, V L Shiryayevskii, A A Kudrinskiy, S V Anpilov, A N Bobrakov</i>	
<b>THERMOMETRY OF THE SYSTEM "HEAT-RESISTANT SAMPLE - INCIDENT PLASMA STREAM"</b> .....	2070
<i>M A Sargsyan, V F Chinnov, D I Kavyrshin, M Kh Gadzhiev, M A Khromov, A V Chistolinov, V N Senchenko</i>	
<b>PLASMA FOR ENVIRONMENT</b> .....	2081
<i>G Van Oost</i>	

## **15. THERMOPHYSICAL PROPERTIES OF SUBSTANCES FOR ENERGETICS**

<b>NANOCARBON COATING ON THE BASIS OF PARTIALLY REDUCED GRAPHENE OXIDE</b> .....	2086
<i>G S Bocharov, V P Budaev, A V Eletsii, S D Fedorovich</i>	
<b>BEHAVIOR OF THERMAL DIFFUSION OF HYDROFLUOROCARBON HFC-32 NEAR THE CRITICAL REGION</b> .....	2090
<i>O B Tsvetkov, Yu A Laptev, S V Rykov, N A Galahova, K S Kolbasijk</i>	
<b>INVESTIGATION OF THE THERMAL EXPANSION OF THE REFRACTORY MATERIALS AT HIGH TEMPERATURES</b> .....	2096
<i>A Kostanovskiy, M Kostanovskaya, M Zeodinov, A Pronkin</i>	
<b>EXPERIMENTAL STUDY OF HIGH-TEMPERATURE PROPERTIES OF ZIRCONIUM CARBIDE AS A PROTECTIVE MATERIAL FOR NUCLEAR POWER AND AEROSPACE TECHNOLOGIES (FROM 2000 TO 5000 K)</b> .....	2102
<i>A I Savvatimskiy, S V Onufriev, S A Muboyadzhyan, N N Seredkin</i>	
<b>THERMOPHYSICAL PROPERTIES OF GRAPHITE HOPG AND HAPG IN THE SOLID STATE AND UNDER MELTING (FROM 2000 K UP TO 5000 K)</b> .....	2110
<i>A I Savvatimskiy, S V Onufriev, S A Konyukhov</i>	
<b>MODELING OF THE BEHAVIOR OF U, EU, PU, AM WHEN HEATING OF RADIOACTIVE GRAPHITE IN THE CARBON DIOXIDE ATMOSPHERE</b> .....	2120
<i>N M Barbin, I A Sidash, D I Terentev, S G Alekseev</i>	
<b>POROSITY INFLUENCE OF POWER GENERATING EQUIPMENT STRUCTURAL MATERIALS ON ITS THERMOELASTIC CHARACTERISTICS AND THERMAL CONDUCTIVITY</b> .....	2125
<i>V. S. Zarubin, E. S. Sergeeva</i>	
<b>DENSITY MEASUREMENT BY RADIOMETRIC METHOD WITH GAMMA IRRADIATION FROM SOURCES OF LOW ACTIVITY</b> .....	2131
<i>I M Astafieva, D N Gerasimov, R E Makseev</i>	
<b>PRECISION MEASUREMENTS OF THERMODYNAMIC PARAMETERS OF HEAVY ALKALI METALS</b> .....	2137
<i>L A Blagonravov, A A Modenov</i>	

<b>OVERVIEW OF THERMAL CONDUCTIVITY MODELS OF ANISOTROPIC THERMAL INSULATION MATERIALS .....</b>	<b>2141</b>
<i>A V Skurikhin, A V Kostanovsky</i>	
<b>THE ASYMPTOTIC SOLUTION OF MODEL EQUATIONS FOR HEAT CAPACITIES OF FLUIDIZED BED PHASES .....</b>	<b>2149</b>
<i>A V Barakov, A P Byrdin, V Y Dubanin, A A Nadeev</i>	
<b>THERMODYNAMIC PROPERTIES OF DISSOCIATED STEAM .....</b>	<b>2155</b>
<i>R Z Aminov, A A Gudym</i>	
<b>THERMODYNAMIC PROPERTIES AND ENERGY CHARACTERISTICS OF WATER+1-PROPANOL.....</b>	<b>2161</b>
<i>A B Alhasov, A R Bazaev, E A Bazaev, B K Osmanova</i>	
<b>PROBLEMS OF LOW-PARAMETER EQUATIONS OF STATE.....</b>	<b>2166</b>
<i>G G Petrik</i>	
<b>RELEASES FROM THE INTERNATIONAL ASSOCIATION FOR THE PROPERTIES OF WATER AND STEAM FOR CALCULATING PROPERTIES OF STEAM, ORDINARY AND HEAVY WATER SUBSTANCE AND SEAWATER.....</b>	<b>2172</b>
<i>A A Alexandrov, K A Orlov, M V Butakova</i>	
<b>PECULIARITIES OF DETERMINING THE EFFECTIVE THERMAL CONDUCTIVITY OF MULTILAYER NANOSTRUCTURES UNDER UNSTEADY HEATING .....</b>	<b>2186</b>
<i>V I Khvesyuk, A Yu Chirkov</i>	
<b>TO THE FRACTAL EQUATION OF STATE .....</b>	<b>2191</b>
<i>R A. Magomedov, R R Meilanov, R P Meilanov, E N Akhmedov, V D Beybalaev, A A Aliverdiev</i>	
<b>NONLINEAR OPTICAL METHODS FOR RESEARCHING OF KINETIC COEFFICIENTS IN BINARY MIXTURES.....</b>	<b>2197</b>
<i>V I Ivanov, G D Ivanova</i>	
<b>EXPERIMENTAL STUDY OF THERMOPHYSICAL PROPERTIES OF THIN-FILM COATINGS BASED ON HOLLOW MICROSPHERES .....</b>	<b>2202</b>
<i>V V Bukhmirov, A K Gaskov</i>	
<b>METHOD OF CONSTRUCTING A FUNDAMENTAL EQUATION OF STATE BASED ON A SCALING HYPOTHESIS .....</b>	<b>2206</b>
<i>V A Rykov, S V Rykov, I V Kudryavtseva, A V Sverdlov</i>	
<b>TO THE DESCRIPTION OF THE TEMPERATURE AND PRESSURE DEPENDENCES OF THE THERMAL CONDUCTIVITY OF SANDSTONE AND CERAMICS.....</b>	<b>2213</b>
<i>S N Emirov, V D Beybalaev, G G Gadzhiev, A E Ramazanova, A A Amirova, A A Aliverdiev</i>	
<b>RESEARCH OF HUMAN KIDNEY THERMAL PROPERTIES FOR THE PURPOSE OF CRYOSURGERY .....</b>	<b>2218</b>
<i>D E Ponomarev, A V Pushkarev</i>	
<b>FATIGUE TESTS RESULTS OF BLADE STEELS WITH MODIFIED SURFACE .....</b>	<b>2222</b>
<i>G V Kachalin, A F Mednikov, A B Tkhabisimov, A I Lebedeva</i>	
<b>EXPERIMENTAL INVESTIGATION OF LINEAR THERMAL EXPANSION OF PYROLYTIC GRAPHITE AT HIGH TEMPERATURES.....</b>	<b>2227</b>
<i>V N Senchenko, R S Belikov</i>	
<b>EXPERIENCE OF SUPERHEAT OF SOLUTIONS: DOUBLY METASTABLE SYSTEMS.....</b>	<b>2235</b>
<i>P V Skripov</i>	
<b>THE SPEED OF SOUND AND THERMOPHYSICAL PROPERTIES OF ISOMERS OF HEXANE .....</b>	<b>2241</b>
<i>A K Radchenko, YA Neruchev</i>	
<b>THE DEVELOPMENT OF THE EQUATION AND TABLES OF DYNAMIC VISCOSITY OF VAPOR MIXTURE OCTAFLUOROPROPANE AND WATER.....</b>	<b>2246</b>
<i>A A Alexandrov, D V Sidenkov</i>	
<b>INVESTIGATION OF THERMAL CONDUCTIVITY OF METAL MATERIALS ON VIEW OF INFLUENCE OF ULTRASONIC WAVES .....</b>	<b>2253</b>
<i>A R Lepeshkin, P P Shcherbakov</i>	
<b>EXPERIMENTAL STUDY OF THERMAL CONDUCTIVITY OF PYROLYSISED MATERIALS BY MEANS OF A FLAT LAYER .....</b>	<b>2259</b>
<i>V D Vaniushkin, S K Popov, D V Sidenkov</i>	
<b>"LIVE" FORMULATIONS OF INTERNATIONAL ASSOCIATION FOR THE PROPERTIES OF WATER AND STEAM (IAPWS).....</b>	<b>2267</b>
<i>V F Ochkov, K A Orlov, S Gerk</i>	
<b>EXPERIMENTAL STUDY OF THE DENSITY OF THE HELIUM-NITROGEN GAS SYSTEM AT LOW TEMPERATURES. ....</b>	<b>2272</b>
<i>V. A. Milyutin</i>	

<b>INVESTIGATION OF GAS AND LIQUID DENSITIES ON THE SATURATION LINE: SOME SCALING MODELS AND NUMERICAL DATA ON H<sub>2</sub>O EXAMPLE .....</b>	<b>2278</b>
<i>E E Ustjuzhanin, V F Ochkov, V E Znamensky, V V Shishakov, S V Rykov</i>	
<b>PREDICTION OF NANOFUIDS PROPERTIES: THE DENSITY AND THE HEAT CAPACITY .....</b>	<b>2283</b>
<i>V P Zhelezny, I V Motovoy, E E Ustyuzhanin</i>	
<b>DEVELOPMENT OF INTERNET ALGORITHMS AND SOME CALCULATIONS OF POWER PLANT COP .....</b>	<b>2290</b>
<i>E E Ustjuzhanin, V F Ochkov, V E Znamensky</i>	

## **16. UNORTHODOX PROBLEMS OF THERMOPHYSICS (MICRO, MESO, NANO)**

<b>ANALYTICAL MODEL OF CYCLIC HEAT EXCHANGE OF THE PLATE OF FINITE SIZES ADJUSTED FOR THE THERMAL RELAXATION .....</b>	<b>2299</b>
<i>Yu A Kirsanov, D V Makarushkin, A E Yudakhin, A Yu Kirsanov</i>	
<b>PHYSICAL PROBLEMS THEORY FIELD RADIATION-CONVECTION.....</b>	<b>2305</b>
<i>V M Repukhov</i>	
<b>MATHEMATICAL MODELS FOR MESO- AND NANO-DOMAIN HEAT, MASS, PULSE TRANSFER PROCESSES.....</b>	<b>2311</b>
<i>I. V. Kudinov, V. A. Kudinov</i>	
<b>HIERARCHY OF MODELS FOR CALCULATING THE THERMAL CONDUCTIVITY IN NANOSTRUCTURES.....</b>	<b>2317</b>
<i>V I Khvesyuk, A A Barinov</i>	
<b>SPACE SOLAR POWER STATIONS. PROBLEMS OF ENERGY GENERATION AND USING ITS ON THE EARTH SURFACE AND NEAREST COSMOS.....</b>	<b>2323</b>
<i>Oa Sinkevich, Dn Gerasimov, Vv Glazkov</i>	
<b>THE CONCENTRATION PARAMETER THERMAL MICROSTRESSES AS THE THERMOPHYSICAL CHARACTERISTICS OF TWO-PHASE MATERIALS.....</b>	<b>2330</b>
<i>V T Kuanishev, I N Sachkov, I G Sorogin, T I Sorogina</i>	
<b>INFLUENCE OF FRACTAL SUBSTRUCTURES OF THE PERCOLATING CLUSTER ON TRANSFERRING PROCESSES IN MACROSCOPICALLY DISORDERED ENVIRONMENTS.....</b>	<b>2340</b>
<i>B P Kolesnikov</i>	
<b>INTEGRAL METHODS OF SOLVING BOUNDARY-VALUE PROBLEMS OF NONSTATIONARY HEAT CONDUCTION AND THEIR COMPARATIVE ANALYSIS.....</b>	<b>2346</b>
<i>V A Kot</i>	
<b>REPLACEMENT OF UNSTEADY HEAT TRANSFER COEFFICIENT BY EQUIVALENT STEADY-STATE ONE WHEN CALCULATING TEMPERATURE OSCILLATIONS IN A THERMAL LAYER.....</b>	<b>2352</b>
<i>M I Supel'Nyak</i>	
<b>SLOW SOLITARY ELASTIC WAVES RESPOND FOR THE SOLITONIC HEAT TRANSFER AND REGISTERED BY THE ACOUSTIC METHOD IN THE METALLIC SAMPLE HAVING DEFECTS.....</b>	<b>2358</b>
<i>E M Kudriavtsev, S D Zotov, A N Baranov, A S Baikin, M A Kaplan, M A Pokrasin, V V Roshchupkin</i>	
<b>GRAPHENE NANOCOMPOSITES AS THERMAL INTERFACE MATERIALS FOR COOLING ENERGY DEVICES .....</b>	<b>2365</b>
<i>A S Dmitriev, A R Valeev</i>	
<b>ON THERMOPHYSICAL EFFECTS ON THE SURFACE OF FUNCTIONAL NANOSTRUCTURED MATERIALS OBTAINED WITH THE APPLICATION OF FEMTOSECOND LASER PULSES.....</b>	<b>2371</b>
<i>D D Babenko, A S Dmitriev, P G Makarov, I A Mikhailova</i>	
<b>FUNCTIONAL ENERGY NANOCOMPOSITES SURFACES BASED ON MESOSCOPIC MICROSPHERES, POLYMERS AND GRAPHENE FLAKES.....</b>	<b>2378</b>
<i>S A Alekseev, A S Dmitriev, A A Dmitriev, P G Makarov, I A Mikhailova</i>	

## **17. METHODOLOGY OF HIGHER EDUCATION**

<b>TECHNOLOGY OF INTERDISCIPLINARY OPEN-ENDED DESIGNING IN ENGINEERING EDUCATION.....</b>	<b>2385</b>
<i>A P Isaev, L V Plotnikov, N I Fomin</i>	

<b>IMPROVING THE QUALITY OF LEARNING DISCIPLINE "TECHNICAL THERMODYNAMICS AND HEAT EXCHANGE" AT ONMU .....</b>	<b>2391</b>
<i>A A Vasserman, V P Malchevsky</i>	
<b>THE CRITERIA OF OPTIMIZATION OF TRAINING SPECIALISTS FOR THE NUCLEAR POWER INDUSTRY AND ITS IMPLEMENTATION IN THE EDUCATIONAL PROCESS .....</b>	<b>2395</b>
<i>S V Lavrinenko, P I Polikarpov</i>	
<b>IMPROVEMENT OF QUALITY OF TRAINING AT BASE OF THE SOLUTION OF THE COMPLEX EDUCATIONAL TASKS .....</b>	<b>2401</b>
<i>V P Zverkov</i>	
<b>THE STUDY OF PHILOSOPHY IN INNOVATIVE POWER ENGINEERING POST-GRADUATE COURSE .....</b>	<b>2405</b>
<i>J V Sokolova</i>	
<b>IMPLEMENTING CDIO PROJECT-BASED LEARNING IN TRAINING OF HEAT AND POWER ENGINEERS.....</b>	<b>2410</b>
<i>E A Boiko, P V Shishmarev, D I Karabarin, S R Yanov, A A Pikalova</i>	
<b>EXOTIC OBJECTS OF ATOMIC PHYSICS .....</b>	<b>2420</b>
<i>A V Eletsii</i>	
<b>DISTANCE EDUCATIONAL TECHNOLOGIES AS MEANS OF INCREASE OF STUDENT'S MOTIVATION IN THE LEARNING OF GENERAL PHYSICS COURSE.....</b>	<b>2440</b>
<i>M K Gubkin, D A Ivanov, I V Ivanova, V S Spivak</i>	
<b>THE HEALTH ABNORMALITIES UNDER THE TECHNOGENIC EXPOSURES RISKS ANALYSIS .....</b>	<b>2444</b>
<i>E V Fedorova, V S Malyshev, A M Borovkova</i>	
<b>METHODOLOGICAL POSSIBILITIES FOR THE SOLUTION OF NEW TASKS FOR "THERMOPHYSICS OF POWER UNITS" DEPARTMENT OF SPBPU.....</b>	<b>2450</b>
<i>S Z Sapozhnikov, V Yu Mityakov, A V Mityakov, A A Gusakov</i>	
<b>APPLICATION OF INFORMATION TECHNOLOGIES WHEN TRAINING IN THE MASTER'S DEGREE PROGRAM .....</b>	<b>2454</b>
<i>T B Volkova, T I Korotkova</i>	
<b>THE AUTOMATED LABORATORY COMPLEX WITH REMOTE ACCESS «MOLECULE PHYSICS AND THERMODYNAMICS».....</b>	<b>2458</b>
<i>S D Fedorovich, P P Shcherbakov, M V Lukashevsky, S P Shcherbakov, I V Voinkova</i>	
<b>INNOVATIVE TECHNOLOGIES IN COURSE ELECTRICAL ENGINEERING AND ELECTRONICS .....</b>	<b>2463</b>
<i>E V Kuznetsov, V I Kiselev, E A Kulikova</i>	
<b>Author Index</b>	