MASTER PROGRAM

for

NINTH INTERNATIONAL CONFERENCE
APPLICATION OF MATHEMATICS IN TECHNICAL AND NATURAL SCIENCES
ALBENA, JUNE 21-26, 2017

TUESDAY, JUNE 20, 2017

17:00-19:00 REGISTRATION
            Flamingo Grand Hotel – 3rd floor
WEDNESDAY, JUNE 21, 2017

07:30-08:30 REGISTRATION
Flamingo Grand Hotel – 3rd floor

08:30-09:00 OPENING (Flamingo Grand Hall)

09:00-10:00 PLENARY LECTURE: Peter Minev
Title: Recent Splitting Schemes for The Incompressible Navier-Stokes Equations
(Flamingo Grand Hall)
Chair: Michail Todorov

10:00-10:30 COFEE BREAK

Parallel Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Nevena Ilieva

10:30-11:00 Speaker: Boris Ananyev
Title: A Guaranteed State Estimation of Linear Retarded Neutral Type Systems

11:00-11:30 Speaker: Serpil Pehlivan
Title: Some Types of Convergence of Sequences of Functions

11:30-12:00 Speaker: Irina Bashkirtseva
Title: Analysis of Stochastic Phenomena in Ricker-Type Population Model with Delay

Parallel Session SCIENTIFIC COMPUTING
(Flamingo Grand Corella Hall)
Chair: Peter Minev

10:30-11:00 Speaker: Nectarios Papanicolaou
Title: Numerical Investigation of Biofilm Growth in Microgravity
11:00-11:30  Speaker: Valentin Gushchin
Title: *The Interaction of a Vortex Pair with A Free Surface*

11:30-12:00  Speaker: Evgenii Karabut/Elena Zhuravleva
Title: *Semi-Analytical Investigation of Unsteady Free-Boundary Flows*

12:00-14:00  LUNCH

14:00-15:00  Parallel Session MATHEMATICAL PHYSICS AND TRANSPORT PROCESSES
(Flamingo Grand Hall)
Chair: Elena Zhuravleva

14:00-14:30  Speaker: Nicolae Tarfulea
Title: *On Solving Constrained Wave Equations*

14:30-15:00  Speaker: Andrei Tarfulea
Title: *Improved Estimates for Thermal Fluid Equations*

15:00-16:00  Parallel Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Elena Zhuravleva

15:00-15:30  Speaker: Lev Ryashko
Title: *Modeling and Stochastic Analysis of Dynamic Mechanisms of The Perception*

15:30-16:00  Speaker: Tsvetan Ostromsky
Title: *Solving the Displacement problem in a Geodesic Polygon with Exact Length Edges and Small Angle Errors*

14:00-16:00  Parallel Session SCIENTIFIC COMPUTING
(Flamingo Grand Corella Hall)
Chair: Nectarios Papanicolaou

14:00-14:30  Speaker: Argus Dunca
Title: Numerical Studies of a Fixed Point Iteration Approach For Approximate Deconvolution Models

14:30-15:00  Speaker: Jianzhen Qian
Title: The Generalized Riemann Solvers and GRP Schemes for Compressible Fluid System

15:00-15:30  Speaker: Shudao Zhang
Title: An Effective 3D MMALE Method for Compressible Fluid Dynamics

15:30-16:00  Speaker: Lili Wang
Title: Numerical Study on The Turbulent Mixing Due to RT and RM Instabilities in The Imploding Problem

16:00-16:30  COFEE BREAK

16:30-18:30  Parallel Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Ivanka Zheleva

16:30-17:00  Speaker: Natalia Kolkovska
Title: Orbital Stability or Instability of Solitary Waves to Boussinesq Paradigm Equation with Quadratic-Cubic Nonlinearity

17:00-17:30  Speaker: Elena Butsenko/Andrey Shorikov
Title: Network Models for Solving the Problem of Multicriterial Adaptive Optimization of Investment Projects Management with Several Acceptable Technologies

17:30-18:00  Speaker: Andrey Shorikov
Title: Algorithm for Solving of Two-Level Hierarchical Minimax Program Control Problem of Final State the Regional Socio-Economic System in the Presence of Risks

18:00-18:30  Speaker: Ivanka Stamova
Title: Impulsive Control on The Mittag-Leffler Stability of
Fractional-Order BAM Neural Network Systems with Time Varying Delays

16:30-18:30  Parallel Session SCIENTIFIC COMPUTING  
(Flamingo Grand Corella Hall)  
Chair: Shudao Zhang

16:30-17:00  Speaker: Anastasia Galaktionova  
Title: Computation of Seismic Wave Field Kinematics in a Three-Dimensional Heterogeneous Isotropic Medium

17:00-17:30  Speaker: Anna Efimova  
Title: PIC-Simulation of The Electron Beam Interaction with Modulated Density Plasma

17:30-18:00  Speaker: Ivan Zubko  
Title: Choosing Internal Degree of Freedom for Damage Formation by Discrete Atomistic Analysis

18:00-18:30  Speaker: Grigory Parshikov  
Title: On Resource-Efficient Algorithm for Nonlinear Systems Approximate Reachability Set Construction

20:00    WELCOME PARTY – Ganvie Beach Club
THURSDAY, JUNE 22, 2017

08:30-09:30  PLENARY LECTURE: Semyon Tsynkov  
Title: Spaceborne SAR  
(Flamingo Grand Hall)  
Chair: Michail Todorov

09:30-10:00 COFEE BREAK

10:00-12:00  Symposium “Statistical and Stochastical Modeling”  
(Flamingo Grand Hall)  
Chair: Milan Stehlik

10:00-10:30  Speaker: Milan Stehlik  
Title: On Flexible Modeling of Generalized Interest Rate

10:30-11:00  Speaker: Pavlina Jordanova  
Title: Inverse Log-Gamma-G Processes

11:00-11:30  Speaker: Alexander Nepp  
Title: Econometric Modeling of The Impact of Religion on Macroeconomic Parameters

11:30-12:00  Speaker: Armine Amiryan  
Title: Harmonizing The Incomplete Statistical Data on The Example of Institutional Factors’ Impact on Pension Systems

10:00-12:00  Parallel Session BIOMATHEMATICS  
(Flamingo Grand Jaco Hall)  
Chair: Semyon Tsynkov

10:00-10:30  Speaker: Victor Olevskyi  
Title: Fuzzy Recognition Method of High Molecular Substances in Evidence-Based Biology

10:30-11:00  Speaker: Erchin Serpedin  
Title: A Robust PCA-Based Algorithm for Metagenomic
Biomarker Detection

11:00-11:30  Speaker: Nicoleta Tarfulea  
Title: *A Latently Infected Cell Inclusive Model for HIV Treatment with Time-Varying Antiretroviral Therapy*

11:30-12:00 Speaker: Sander Paekivi  
Title: *Memory Effects on a Resonate-And-Fire Neuron Model Subject to Ornstein-Uhlenbeck Noise*

12:00-14:00 LUNCH

Flamingo Grand Hall  
Chair: Michail Todorov

14:00-14:45 KEYNOTE LECTURE: Hristo Kojouharov  
Title: *Modeling the Effects of the Immune System on Bone Fracture Healing*

15:00-16:00 Symposium “Statistical and Stochastical Modeling”  
(Flamingo Grand Hall)  
Chair: Milan Stehlik

15:00-15:30 Speaker: Pece Mitrevski  - cancelled  
Title: *On the Numerical Solution vs. Discrete-Event Simulation of Fluid Stochastic Petri Net Models*

15:30-16:00 Speaker: Irina Hvozdeva  
Title: *The Method of Trend Analysis of Gas Turbine Engine Parameters in Long-Term Operation*

15:00-16:00 Parallel Session SCIENTIFIC COMPUTING  
(Flamingo Grand Jako Hall)  
Chair: Hristo Kojouharov

15:00-15:30 Speaker: Nevena Ilieva  
Title: *Biomolecule Modeling: Conformation Studies in Coarse-
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| 15:30-16:00 | Speaker: Elena Lilkova  
Title: *Studying The Asymmetry in The hIFNγ Homodimer Using Molecular Dynamics Simulations* |
| 16:00-16:30 | **COFEE BREAK**                                                      |
| 16:30-18:30 | Symposium “Statistical and Stochastical Modeling”  
(Flamingo Grand Hall)  
Chair: Milan Stehlik |
| 16:30-17:00 | Speaker: Petras Rupsys  
Title: *Influence of Noise on Decay Predictions in Standing Trees* |
| 17:00-17:30 | Speaker: Maya Stoimenova  
Title: *Regression Trees Modeling and Forecasting of PM10 Air Pollution in Urban Areas* |
| 17:30-18:00 | Speaker: Ivanka Zheleva  
Title: *Analysis and Modeling of Daily Air Pollutants in The City of Rousse, Bulgaria* |
| 18:00-18:30 | Speaker: Margarita Filipova  
Title: *Mathematical Modeling of the Heat Transfer during Pyrolysis Process Used for End-of-Life Tires Treatment* |
| 16:30-17:30 | Parallel Session NEW TRENDS IN INFORMATION TECHNOLOGIES  
(Flamingo Grand Jaco Hall)  
Chair: Rossen Ivanov |
| 16:30-17:00 | Speaker: Marcin Paprzycki  
Title: *Combining Semantic Technologies with a Content-Based Image Retrieval System - Preliminary Considerations* |
| 17:00-17:30 | Speaker: Marcin Paprzycki |

*Grain Approaches*
Title: Building a Platform to Collect Crowdsensing Data – Preliminary Considerations

17:30-18:00 Parallel Session MATHEMATICAL PHYSICS AND TRANSPORT PROCESSES (Flamingo Grand Jaco Hall) Chair: Rossen Ivanov

17:30-18:00 Speaker: Victor Lyashenko/Anton Zaika Title: Generalized Mathematical Model of Heat Conduction in a Complex Multi-Layered Area
FRIDAY, JUNE 23, 2017

08:30-09:30  Flamingo Grand Hall
Chair: Michail Todorov
PLENARY LECTURE: Vladimir Shaydurov
Title: Numerical Method for Mean Field Games in Management

09:30-10:00 COFEE BREAK

10:00-12:00  Parallel Session CONTINUUM MECHANICS
Flamingo Grand Hall
Chair: Vladimir Shaydurov
10:00-10:30  Speaker: Yulia Olevska
Title: Asymptotic Estimation of Free Vibrations of Nonlinear Plates with Complicated Boundary Conditions
10:30-11:00  Speaker: Wentao Liu
Title: Shock-induced Microspall in Tin Plate
11:00-11:30  Speaker: Min Yang
Title: Study on Turbulent Mixing Induced by Rayleigh-Taylor Instability Using The BHR k-s-a-b Model
11:30-12:00  Speaker: Dobri Dankov
Title: Numerical Simulation of Pulsed Pirani Sensor Mem

10:00-11:00  Parallel Session BIOMATHEMATICS
(Flamingo Grand Jaco Hall)
Chair: Ivanka Zheleva
10:00-10:30  Speaker: Elena Nikolova
Title: Evolution of Nonlinear Waves in a Blood-filled Artery with an Aneurysm
10:30-11:00  Speaker: Michail Todorov/Anna Antonova
Title: The Dynamics of Two Linearly Coupled Goodwin Oscillators

11:00-12:00 POSTER SESSION
(Flamingo Grand Jaco Hall)

Vyacheslav Glinskikh
Title: High-Performance Computing on GPUs for Resistivity Logging of Oil and Gas Wells

12:00-12:30 LUNCH

12:30-19:30 EXCURSION TO PLISKA - THE CAPITAL OF THE FIRST BULGARIAN STATE (7-9 CENTURY AD) AND THE MADARA RIDER (8 CENTURY AD)
SATURDAY, JUNE 24, 2017

08:30-09:30  PLENARY LECTURE: Istvan Farago
Title: Some Adequate Discrete Models in Biomathematics
(Flamingo Grand Hall)
Chair: Michail Todorov

09:30-10:00  COFFEE BREAK

10:00-12:00  Special Session COMPUTATIONAL MEDICINE
(Flamingo Grand Hall)
Chair: Natalia Trayanova

10:00-10:30  Speaker: Natalia Trayanova
Title: Computational Cardiology

10:30-11:00  Speaker: Donald Gaver
Title: Reduced Dimension Modeling of
Recruitment/Derecruitment Dynamics in The Lung

11:00-11:30  Speaker: Jason Bayer
Title: The Development of Novel Cardiac Arrhythmia
Electrotherapies Using Computational Cardiac Electrophysiology

11:30-12:00  Speaker: Hermenegild Arevalo
Title: Using Personalised Virtual Heart Models to Gain
Insights into Causes of Sudden Cardiac Death

10:00-12:00  Parallel Session CONTINUUM MECHANICS
(Flamingo Grand Jaco Hall)
Chair: Istvan Farago

10:00-12:00  Speaker: Ivan Zubko
Title: Material Rotation and Rate-Type Finite-Strain Elasticity
for Two-Dimensional Oblique Medium

10:30-11:00  Speaker: Evgenii Chentsov  
Title: Modeling of Wave Processes in a Blocky Medium with Fluid-Saturated Porous Interlayers

11:00-11:30  Speaker: Maria Varygina  
Title: Numerical Solution of Dynamic Problems in Micropolar Plates and Shells on Supercomputers with GPUs

11:30-12:00  Speaker: Andrei Kolyshkin  
Title: Convective Instability of Non-Isothermal Couette Flow Between Two Rotating Cylinders Caused by Internal Heat Generation in Accordance with the Arrhenius Law

12:00-14:00 LUNCH

Session BIOMATHEMATICS  
(Flamingo Grand Hall)  
Chair: Michail Todorov

14:00-14:45  KENOTE LECTURE: Gabriel Dimitriu  
Title: Evolutionary Dynamics in Cancer Cell Populations and Optimal Control of Targeted Chemotherapy Delivery

15:00-15:30  Symposium “STATISTICAL AND STOCHASTICAL MODELING”  
(Flamingo Grand Hall)  
Chair: Milan Stehlik

15:00-15:30  Speaker: Khalid Qaraqe/Erchin Serpedin  
Title: Resource Allocation in Cognitive Communication Systems via Convex Optimization

15:30-16:00  Parallel Session SCIENTIFIC COMPUTING  
(Flamingo Grand Hall)  
Chair: Milan Stehlik
15:30-16:00 Speaker: Evelina Veleva  
Title: *Generation of Correlation Matrices*

15:00-16:00 Parallel Session APPLIED PHYSICS  
(Flamingo Grand Jaco Hall)  
Chair: Gabriel Dimitriu

15:00-15:30 Speaker: Victor Olevskyi/Olexander Olevskyi  
Title: *Study of Eigenfrequencies with The Help of Prony’s Method*

15:30-16:00 Speaker: Dzmitry Shymanchuk  
Title: *The Research of the Coupled Orbital-Attitude Controlled Motion of Celestial Body in the Neighborhood of the Collinear Libration Point L_1*

16:00-16:30 COFEE BREAK

16:30-18:00 Parallel Session SCIENTIFIC COMPUTING  
(Flamingo Grand Hall)  
Chair: Milan Stehlik

16:30-17:00 Speaker: Gyulnara Voskoboynikova /Anna Efimova  
Title: *Multifactor Estimation of The Ecological Risks Through Numerical Simulation*

17:00-17:30 Speaker: Milen Borisov  
Title: *Maximizing the Biogas Production of a Delay Bioreactor Model via Extremum Seeking*

17:30-18:00 Speaker: Jordan Genoff - cancelled  
Title: *On Three Sources of Inaccuracy in Large-Scale Molecular Mechanics Simulations*

16:30-18:00 Parallel Session APPLIED PHYSICS
16:30-17:00  Speaker: Lyudmila Prokudina  
Title: Mathematical Modeling of the Wave Surface of Non-Isothermal Liquid Film

17:00-17:30  Speaker: Astrid Rekker 
Title: Interspike Interval Distribution of a Resonant-And-Fire Neuron Model Driven by a Mittag-Leffler Noise

17:30-18:00  Speaker: Martin Nikolo 
Title: The Impact of Maki Parameter and Spin Orbit Scattering Constants on The WHH Model of Upper Critical Magnetic Fields in Ni- and Co- doped Pnictide Bulk Superconductors

19:30  BANQUET DINNER RESTAURANT “GREEN FOREST”, MEETING POINT RECEPTION OF FLAMINGO GRAND HOTEL
SUNDAY, JUNE 25, 2017

08:30-09:30 PLENARY LECTURE: Lisa Fauci
Title: *Biofluid Mechanics of Reproduction*
(Flamingo Grand Hall)
Chair: Michail Todorov

09:30-10:00 COFEE BREAK

10:00-12:00 Special Session ADVANCES AND TRADITION IN SOLITON THEORY DEDICATED TO PROFESSOR VLADIMIR GERDJIKOV ON THE OCCATION OF HIS 70TH BIRTHDAY
(Flamingo Grand Hall)
Chair: Michail Todorov

10:00-10:30 Speaker: Vladimir Gerdjikov
Title: *Integrable Equations on Symmetric Spaces, Generalized Fourier Transforms and Mikhailov Reductions*

10:30-11:00 Speaker: Rossen Ivanov
Title: *A Dressing Method for The Camassa-Holm Equation*

11:00-11:30 Speaker: Alan Compelli
Title: *Solitary-Wave Solution of Flat Surface Internal Geophysical Waves with Vorticity*

11:30-12:00 Speaker: Sanichiro Yoshida
Title: *Wave Dynamics of Deformation and Fracture*

10:00-11:30 Parallel Session MATHEMATICAL PHYSICS AND TRANSPORT PROCESSES
(Flamingo Grand Jaco Hall)
Chair: Lisa Fauci

10:00-10:30 Speaker: Vassil Vassilev
Title: About Two-Parameter Family of Nonlinear Differential Equations

10:30-11:00  Speaker: Galin Valchev
Title: Van der Waals Interactions between Axisymmetric Lipid Membranes and Planar Substrate

11:00-11:30  Speaker: Peter Djondjorov
Title: Exact Results for the Casimir Force in a Model with Neumann-infinity Boundary Conditions

11:30-12:00 Parallel Session NUMERICAL METHODS

11:30-12:00  Speaker: Ekaterina Dementyeva
Title: The Semi-Lagrangian Method for the Navier-Stokes Problem for Viscous Incompressible Fluid

12:00-14:00 LUNCH

14:00-15:00 Parallel Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Vladimir Gerdjikov

14:00-14:30  Speaker: Lev Ryashko
Title: Analysis of The Stochastically Forced Invariant Manifolds of Dynamic Systems

14:30-15:00  Speaker: Irina Bashkirtseva
Title: Controlling Stochastic Sensitivity by The Dynamic Regulators

15:00-15:30  Speaker: Nikolay Kutev
Title: Necessary and Sufficient Conditions for Finite Time Blow Up of The Solutions to Double Dispersion Equation

15:30-16:00  Speaker: Elitsa Raeva/Velizar Pavlov
Title: Planning Outstanding Reserves in General Insurance
14:00-16:00  Parallel Session NUMERICAL METHODS
(Flamingo Grand Jaco Hall)
Chair: Sanichiro Yoshida

14:00-14:30  Speaker: Miklos Mincsovics
Title: *Stability of Linear Multistep Methods*

14:30-15:00  Speaker: Vasily Shmyrov
Title: *The Research of Controllable Motion in a Neighborhood of Collinear Libration Point by Conservative Methods*

15:00-15:30  Speaker: Svetlana Tikhovskaya
Title: *Investigation of The Numerical Differentiation Formulas of Functions with Large Gradients*

15:30-16:00  Speaker: Vesselina Vucheva
Title: *Numerical Investigation of Sixth Order Boussinesq Equation*

16:00-16:30  COFEE BREAK

16:30-17:30  Parallel Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Vladimir Gerdjikov

16:30-17:00  Speaker: Vesela Mikhova/Velizar Pavlov
Title: *Comparative Analysis on The Probability of Being a Good Payer*

17:00-17:30  Speaker: Velelin Todorov
Title: *Efficient Stochastic Approaches for Sensitivity Studies of an Eulerian Large-Scale Air Pollution Model*

17:30-18:00  Parallel Session APPLIED PHYSICS
(Flamingo Grand Hall)
Chair: Vladimir Gerdjikov
17:30-18:00 Speaker: Mir Hashemi
Title: *Non-Classical Lie Symmetry Analysis to the Nonlinear Time-Fractional Differential Equations*

16:30-18:00 Parallel Session NUMERICAL METHODS
(Flamingo Grand Jaco Hall)
Chair: Sanichiro Yoshida

16:30-17:00 Speaker: Anatoly Kardashevsky
Title: *An Iterative Solution of the Inverse Cauchy Problem for Elliptic Equations by Conjugate Gradient Method*

17:00-17:30 Speaker: Alexander Sesekin
Title: *Optimization of Layouts of Low-Rise Residential Buildings*

17:30-18:00 Speaker: Elena Kostousova
Title: *On Feedback Target Control for Uncertain Discrete-Time Bilinear Systems with State Constraints through Polyhedral Techniques*
MONDAY JUNE 26, 2017

08:30-09:30  PLENARY LECTURE: Alejandro Aceves
Title:  *Current Trends in Nonlinear Photonics*
(Flamingo Grand Hall)
Chair: Michail Todorov

09:30-10:00  COFFEE BREAK

10:00-11:00  Session SCIENTIFIC COMPUTING
(Flamingo Grand Hall)
Chair: Nikolay Kutev

10:00-10:30  Speaker: Dimiter Dimitrov
Title:  *Accounting Services for Heterogeneous Computing Resources*

10:30-11:00  Speaker: Todor Gurov
Title:  *ArctosPop: Programme for Estimating the Brown Bear (Ursus arctos) Population Size in Bulgaria*

11:00-12:00  Session APPLIED ANALYSIS
(Flamingo Grand Hall)
Chair: Nikolay Kutev

11:00-11:30  Speaker: Emin Ozcag
Title:  *Results on Applications of Neutrix Calculus to Some Operations on Distributions*

11:30-12:00  Speaker: Natalia Zhelonkina
Title:  *The Stability of Tubes of Discontinuous Solutions of Dynamical Systems*

12:00-12:30  Speaker: Ahmet Zayed - cancelled
Title:  *Numerical Solutions to an Energy Concentration Problem*
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<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Title</th>
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<tr>
<td>10:00-12:00</td>
<td>Session NUMERICAL METHODS</td>
<td>Alexander Matviychuk</td>
<td>On One Algorithm for Solution to The Control Problem Using Sets of Guides</td>
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<td>Oxana Matviychuk</td>
<td>Ellipsoidal Estimates of Reachable Sets of Impulsive Control Problems under Uncertainty</td>
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<td>Natalia Yaparova</td>
<td>Method for Solving a Problem of Nonlinear Heating a Cylindrical Body with the Unknown Initial Temperature</td>
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<td>Mohsen Alipour</td>
<td>Numerical Investigation on Fractional Variational Problems Depending on Indefinite Integrals</td>
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<td>12:00-12:30</td>
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<td>Maitree Podisuk</td>
<td>Numerical Solutions to an Energy Concentration Problem Associated with the Affine Fourier Transform</td>
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<td>12:30</td>
<td>RECAPITULATION AND OFFICIAL CLOSING SESSION</td>
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<td>OF THE CONFERENCE (Falmingo Grand Hall)</td>
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<td>12:45</td>
<td>GOOD-BYE COFEE BREAK</td>
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