

**LYUBOMIR T. GRUYITCH**  
**DIPL. M. ENG., M. E. E. SC., D. SC., D. H. C.**



**RESUME**

**CURRICULUM VITAE**

**LIST OF PUBLICATIONS**

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## RESUME

### HONORS

French Republic honored Professor Gruyitch *Doctor Honoris Causa* of the University of Lille I, for scientific and educational contributions to *Systems Science and Control Theory* (1984).

Association of Serbia for Systems, Automatic Control and Measurement honored Professor Gruyitch *Distinguished and Honorary Member* (1989).

The highest honor by the *Faculty of Mechanical Engineering (FME)*, University of Belgrade, Serbia, 1997.

### AWARDS

City of Belgrade and the First Belgrade High School (1958), Belgrade University (1960), and Slovenian industry "Iskra" (1971) honored Mr. Gruyitch with their prestigious academic awards.

### EDUCATION

Mr. Lyubomir T. Gruyitch is Certified Mechanical Engineer (Dipl. M. Eng.), Master of Electrical Engineering Sciences (M. E. E. Sc.), and Doctor of Engineering Sciences (D. Sc.) (All with the University of Belgrade, Serbia).

### RESEARCH

The main scientific and engineering contributions and interests by Dr. Lyubomir T. Gruyitch have been in the next areas:

- *Dynamics and modeling of engineering systems including neural and fuzzy-neural networks.*
- *Linear and nonlinear control systems theory. Synthesis of robust, stabilizing and/or tracking control of technical plants.*
- *Stability theory of nonlinear dynamical systems with diverse applications.*
- *Time, physical principles, relativity theory, dynamical systems with multiple time scales and control.*
- *Trackability and tracking theory of linear and nonlinear control systems. Its applications to various technical plants.*

Dr. Gruyitch was a leading contributor to the creation of the research *Laboratory of Automatic Control, Mechatronics, Manufacturing Engineering and Systems Engineering* of the National School of Engineers (Belfort, France), and a founder of the educational and research *Laboratory of Automatic Control* of the FME.

### EMPLOYMENT (\*with tenure): TEACHING AND RESEARCH

France \* (retired May 1, 2007), South Africa (10 years contract), France (visiting), United States of America (visiting), Serbia \*.

### PUBLICATIONS

Dr. Gruyitch published 8 books (7 in English, 1 in Serb), 4 textbooks (in Serbo-Croatian), 11 lecture notes (7 in French, 2 in English, 2 in Serbo-Croatian), one manual of solved problems, one book translation from Russian, chapters in eight scientific books, 130 scientific papers in scientific journals, 173 conference research papers and 2 educational papers.

### SUPERVISOR OF THESES

Professor Gruyitch supervised one doctorate at the University of Technology Belfort-Montbéliard - UTBM (France), which gained the highest grade by an international (French - USA) jury, five doctorates at the University of Belgrade (Serbia), four DEA (equivalent to M. Sc.) theses at the ENI and five master theses at the University of Belgrade.

### CONTRIBUTIONS TO EDUCATION

Professor Gruyitch was a co-initiator of the proposal for a new tentative, highly advanced, Department of *Automatique et Systématique* at the UTBM, and the Coordinator of the team that worked out the full project. He was cofounder of the Cathedra of Automatic Control and of the undergraduate and graduate Group of Automatic Control of the FME. He introduced a number of new courses at the universities in France, South Africa and Serbia.

### INDUSTRIAL COOPERATION

Professor Gruyitch was the principal investigator supervising several projects funded by industry in Serbia.

### ADMINISTRATIVE, EDUCATIONAL AND LEADERSHIP RESPONSIBILITIES

Professor Gruyitch was a member of the Acting Senate of the UTBM and the Coordinator of the Commission of Research of the UTBM. He was the Chief of the Cathedra of Automatic Control, the Chief of the Laboratory of Automatic Control and the President of the Senate of the Faculty of Mechanical Engineering, Belgrade.

### INVITED UNIVERSITY SEMINARS and INTERNATIONAL SCIENTIFIC CONFERENCES

Dr. Gruyitch gave invited university seminars in Belgium, Canada, England, France, Russia, Serbia, Tunis and USA.

Professor Gruyitch was invited plenary sessions speaker, Organizer and/or Chairman of invited sessions at the international conferences, and President of the International Program Committee of the IFAC - IFIP - IMACS Conference *Control of Industrial Systems*, Belfort, France (more than 300 participants from 42 countries with four continents).

## **CURRICULUM VITAE**

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## PERSONAL AND FAMILY DATA

Given and FAMILY NAME: **Lyubomir T. GRUYITCH\*\*\***.  
 Place and date of birth: Belgrade, Serbia (then The Kingdom of Yugoslavia), October 29, 1939.  
 Family: Married. Spouse **Krunitsa\*\*\*** and daughter **Yelena\*\*\*** living together mainly in Belgrade, Serbia or in France, son **Djordje\*\*\***, and grand-sons **Bogdan\*\*\*** and **Vladan\*\*\*** living in France.  
 Nationality (ethnicity): Serb.  
 Native and basic citizenship: The Republic of Serbia.  
 Acquired citizenship: French Republic.

## LANGUAGES

### MATERNAL

Serb.

### FOREIGN

Dr. Gruyitch speaks English fluently; speaks French and effectively uses scientific literature in Russian.

## HONORS

The Minister of the National Education of France honored Mr. Gruyitch **Doctor Honoris Causa** of the University of Science and Engineering Lille I, Lille, France, for *the eminent scientific and educational achievements in Systems Science and Control Theory* (1984).

The Institute of Electrical and Electronics Engineers (USA) honored Dr. Gruyitch **Senior Membership**.

*Association of Serbia for Systems, Automatic Control, and Measurement (SAUM)* honored Professor Gruyitch **Meritorious and Honorary Member**.

## AWARDS

1997: The highest award by the *Faculty of Mechanical Engineering*, University of Belgrade, for teaching and scientific contributions to the Faculty, 1964 - 1992.

1988: Award by the *Yugoslav Air Force Academy* for teaching achievements in the undergraduate course: *Foundations of Automatic Control*.

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\* Our names are written in Serb Cyrillic in our mother Serb language in the certificates and in the diplomas issued in Serbia. The names were obligatory written only in Croatian Roman in the SFRY (ex-Yugoslavia) passports. Consequently, I wrote my name in Croatian Roman in all publications even they were written in a non-Croatian language, hence in publications in English. The given names and the family name are written now in English in the new passport.

\*\* In Serb: *Љубомир Т. Гружић*. Its correct transcription in English is **Lyubomir T. Gruyitch** (In my passport of R. Serbia).

\*\*\* In Serb: *Круница, Јелена, Ђорђе, Богдан and Владан*. In Serbo - Croatian: *Ljubomir, Krunica, Jelena, Djordje, Bogdan and Vladan Grujić*. *Grujić was wrongly simplified into Grujic* in English (in US SSN) and in French (in the decree on the naturalization and French passport). The correct English and French pronunciation of *Љубомир Т. Гружић* is preserved only in **Lyubomir T. Gruyitch**, but essentially distorted in Ljubomir T. Grujic. Once became aware (1993) of this I have been using **Lyubomir T. Gruyitch** out of the territory of ex-SFR Yugoslavia.

- 1986: *JUREMA* award, Zagreb, Croatia, Yugoslavia, for contributions to the development of *Systems Science* and *Automatic Control* through SAUM and JUREMA.
- 1971: The best Master Science award "Vatroslav Byedanich" at the Yugoslav competition for the best Master Science Thesis in Electrical Engineering 1970, which was honored by Slovenian industry "ISKRA", Kranj, Slovenia, Yugoslavia. *The supervisor was* Dr. M. Rakitch, late Professor with the Faculty of Electrical Engineering, University of Belgrade.
- 1958/59: The *University of Belgrade* award for the best junior student success at the FME.
- 1958: The *Young Mathematician Success* award by the City of Belgrade.  
*The First Literary Prize*, The First Belgrade High School, Belgrade.

## EDUCATION

D. Sc. 1972:

*Large-Scale Systems Stability*, D. Sc. Dissertation, Faculty of Mechanical Engineering, University of Belgrade, (published 1974). *The jury members were:* Dr. M. Rakitch, Professor and Vice Dean with the Faculty of Electrical Engineering, Dr. Z. Mamuzitch, Professor of Mathematics, Dr. B. Miloykovitch, Professor of Control and Supervisor, Academician Dr. S. Pivko, Professor of Mechanics, Dr. M. Sekulitch, Associate Professor of Servomechanisms, all with the Faculty of Mechanical Engineering.

The theoretical results were effectively applied to the stability analysis of an orbital astronomical observatory modeled by NASA. A part of the results was a further development of those established in cooperation with Dr. D. D. Siljak [D. D. Shilyak], Professor with the Department of Electrical Engineering, University of Santa Clara, California, to time varying nonlinear large-scale systems.

M. Sc. 1970:

*Synthesis of an Automatic Control System of a Rigid Body Motion Through a Fluid*, Faculty of Electrical Engineering - University of Belgrade. The supervisor was Dr. M. Rakitch, Professor and Vice Dean with the Faculty of Electrical Engineering. The concept of stochastic practical stability was introduced and criteria were proved. The thesis was defended with the highest mark. The postgraduate studies curriculum lasted two years.

Dipl. Eng. (Graduate / Certified Engineer) 1963:

*Automatic Regulation of Thermal Processes Temperature*, Faculty of Mechanical Engineering, University of Belgrade. The supervisor was Dr. B. Miloykovitch, Professor of Control, Faculty of Mechanical Engineering. It was defended with the highest mark. The undergraduate studies curriculum lasted four and half years.

## LEADERSHIP POSITIONS

### Academic

- 1998 - 1999: Chairman of the Working Group of the project of a tentative new highly advanced Department of *Automatique et Systématique*, University of Technology Belfort – Montbeliard. The University Senate decided instead to establish a conventional electrical engineering department called initially formally Department of Control Systems (*Département Génie des Systèmes de Commande*, changed later adequately to: *Département Génie d'Automatique, Electrotechnique et Electronique*).
- 1992 - 1993: AECI Chair Professor of Control, Department of Electrical Engineering, University of Natal, Durban, South Africa.

- 1991 - 1992: Chief of the Cathedra of Automatic Control and Head of the Division of Large Scale Systems, Faculty of Mechanical Engineering, Belgrade.
- 1983 - 1984: Chief of the Cathedra of Automatic Control, Faculty of Mechanical Engineering, Belgrade.
- 1979 - 1983: Director of the Laboratory of Automatic Control, Faculty of Mechanical Engineering, Belgrade.
- 1979: Founder of the educational and research Laboratory of Automatic Control, Faculty of Mechanical Engineering, Belgrade.
- 1974: Co-founder of the Option of Automatic Control (which has educated more than thousand Certified Control Engineers, many of them are high researchers in Western Europe and USA, one is Associate Professor in USA, another one is Associate Professor in Australia), Faculty of Mechanical Engineering, Belgrade.
- 1972: Co-founder of the Cathedra of Automatic Control (responsible academic unit for research and education in control), Faculty of Mechanical Engineering, Belgrade.

### Professional and Social

- 1990 - 1992: President of SAUM - the Association of Serbia for Systems, Automatic Control and Measurement.
- 1983 - 1985: President of the Founding Assembly of SAUM (as the development of USAUM).
- 1982 - 1984 : President of the Senate, Faculty of Mechanical Engineering (about 250 teaching staff members, 200 administrative and technical staff members and about 2500 students studying altogether as freshmen and sophomores, and continuing as juniors in one of fourteen optional Faculty Divisions), Belgrade.
- 1981: President of the Founding Assembly of the Society for Systems, Automatic Control and Measurement of Serbia (USAUM).

## EMPLOYMENT

### Long term

#### France:

*Ecole Nationale d'Ingénieurs integrated with the Institut Polytechnique de Sévenans into the University of Technology Belfort – Montbeliard (1999), Belfort:*

1993-2007: University Professor (the first class, with tenure). Obligatory retirement: May 1, 2007.

#### South Africa:

*Department of Electrical Engineering, University of Natal, Durban:*

1992 - 1993: AECI Professor of Control.

#### Serbia:

*Faculty of Mechanical Engineering, University of Belgrade, Belgrade:*

1988 - 1992: Full Professor of Automatic Control (with tenure).



1979 - 1988: Associate Professor of Automatic Control.  
 1974 - 1979: Assistant Professor of Automatic Control.  
 1964 - 1974: Teaching and Research Assistant of Automatic Regulation.

### Visiting

#### France:

*Ecole Centrale de Lille, Lille:*

1992: Invited Visiting Professor.

#### United States of America:

*Department of Electrical and Computer Engineering, Louisiana State University, Baton Rouge, Louisiana:*

1989 - 1990: Visiting Professor.

*Department of Electrical and Computer Engineering, University of Notre Dame, Notre Dame, Indiana:*

1988 - 1989: Invited Visiting Professor.

*Department of Electrical Engineering, University of Santa Clara, Santa Clara, California:*

1971: Research Associate.

## TEACHING CURRICULUM

### Undergraduate Studies

#### Courses

*Ecole Nationale d'Ingénieurs and University of Technology Belfort - Montbeliard, Belfort, France:*

Automatic Control and System Guidance (the new programs created by Professor Gruyitch).

Robotics, Advanced Robotics and Control of Industrial Processes (the new courses introduced by Professor Gruyitch). Automation.

*University of Natal, Natal, South Africa:*

Linear Control Systems (the new program created by Professor Gruyitch).

Nonlinear Control Systems (the new course introduced by Professor Gruyitch).

*University of Belgrade:*

Foundations of Automatic Control (the new program created by Professor Gruyitch).

Automatic Control, Discrete-Time Systems, Process Dynamics, Nonlinear Systems, Process Control Computers (the new courses introduced by Professor Gruyitch).

*Louisiana State University, Louisiana, USA:*

Introduction to Control Systems, Topics in Control System Design, Discrete-Time Control Systems.

*University of Notre Dame, Indiana, USA:*

Introduction to Electrical Networks, Networks and Systems II, Introduction to Electrical Science.

#### Diploma Engineering Work Supervision, University of Belgrade:

Dr. Gruyitch supervised more than twenty Diploma Engineering Works.

### Postgraduate Studies

#### M. Sc. courses:

*University of Natal, Natal, South Africa:*

Nonlinear Systems (the new course introduced by Professor Gruyitch).

*University of Belgrade:*

Nonlinear Systems, Optimal Control Systems, Time-Varying Nonlinear Systems including Adaptive Control Systems, Engineering Cybernetics: Nonlinear Systems, Automatic Control of Air - Conditioning Systems, Automatic Control of Hydro-Power Plants (the new courses introduced by Professor Gruyitch).

*Louisiana State University, Louisiana, USA:*

Nonlinear Systems Analysis, Optimal Control Systems.

*University of Notre Dame, Indiana, USA:*

Stability of Nonlinear Systems (the new program introduced by Professor Gruyitch).

*UNESCO Center for Large-Scale Control Systems, University of Novi Sad, Serbia:*

Large - Scale Systems (the new course introduced by Professor Gruyitch).

***D. E. A. (Diplôme des Etudes Approfondies) Courses (equivalent to M. Sc. courses):****Ecole Nationale d'Ingénieurs and University of Technology Belfort – Montbéliard, Belfort:*

Robotics (the new course introduced by Professor Gruyitch).

Neural networks and fuzzy sets (the new course introduced by Professor Gruyitch).

***D. Sc. Courses:****University of Belgrade:*

Large-Scale Systems (the new course introduced by Professor Gruyitch).

Large-Scale Power Systems Stability (the new course introduced by Professor Gruyitch).

**Theses and Dissertations****D. E. A. theses supervision:***Ecole Nationale d'Ingénieurs de Belfort:*

Five D. E. A. theses were defended under the supervision of Professor Gruyitch.

***M. Sc. theses supervision:****University of Belgrade:*

Professor Gruyitch supervised five M. Sc. theses.

***D. Sc. dissertations supervision :****Ecole Nationale d'Ingénieurs de Belfort, Université de Franche Comte, Besançon:*

Professor Gruyitch supervised one Ph. D. dissertation that was honored the highest grade by the international (French - USA) jury.

*University of Belgrade:*

Professor Gruyitch supervised five D. Sc. dissertations.

## SCIENTIFIC CURRICULUM

### ***Ecole Nationale d'Ingénieurs and University of Technology Belfort – Montbeliard, Belfort:***

- 1993-2007:
- Design of natural tracking control and natural tracking controllers for linear and nonlinear dynamical plants.
  - Interval matrices and interval matrix functions.
  - Linear systems theory: complete transfer functions of continuous - time and discrete - time systems.
  - Neural networks and neural controllers.
  - New Lyapunov methodology called *Consistent Lyapunov Methodology* for nonlinear systems, which includes Lyapunov's original methodology for linear systems.
  - Stability, power and energy.
  - Time, physical principles, relativity theory, dynamical systems with multiple time scales and control: meaning and properties of time, fundamentals of a new relativity theory, new physical principle, natural trackability of nonlinear plants and natural tracking control synthesis.
  - Trackability theory of linear and nonlinear dynamical plants such as robots, electrical motors, planes and chemical processes.
  - Tracking theory of linear and nonlinear control systems.

### ***University of Natal:***

- 1992 -1993:
- Asymptotic stability domains of time-varying nonlinear systems.
  - Design of natural tracking control for linear systems and robots.
  - Linear systems theory: complete transfer functions.
  - Lyapunov functions: exact construction.
  - Tracking theory of nonlinear systems.

### ***Ecole Centrale de Lille:***

- 1992 :
- Stability domains.

### ***University of Belgrade:***

- 1964 - 1992:
- Adaptive control systems: stabilization, robustness and tracking.
  - Control design for industrial and thermal processes, planes and robots.
  - Large-scale nonlinear systems: stability and tracking.
  - Linear control systems: stability, stabilization, optimization and tracking.
  - Neural networks: modeling, dynamics and stability.
  - Nonlinear systems: stability, stabilization, optimization and tracking.
  - Singularly perturbed systems: stability, stabilization and tracking.
  - Structurally variable control systems: stability and tracking.

- Systems dynamics and modeling: mechanical systems, fluid and thermal processes.
- Tracking theory and tracking control synthesis.

***Louisiana State University:***

- 1989 - 1990:
- Lyapunov functions generation and asymptotic stability domains.
  - Neural networks: modeling, dynamics and stability.
  - Tracking theory and natural tracking control.

***University of Notre Dame:***

- 1988 -1989:
- Lyapunov functions: determination.
  - Neural networks: dynamics.
  - Tracking theory: Lyapunov-like approach.

***University of Santa Clara:***

- 1971:
- Asymptotic stability: time-varying nonlinear systems.
  - Large-scale systems: stability.
  - Practical stability: nonlinear systems.

## INVENTION

L. T. Grujic and W. P. Mounfield, Jr., *Natural Tracking Controller*, USA Patent No. 5,379,210, 1995.

## MAIN INVITED LECTURES

- *Academy of Nonlinear Sciences*, Moscow, Russia,
- *Clemson University*, Clemson, South Carolina, USA,
- *Ecole Centrale de Lille*, Villeneuve d'Ascq, France,
- *ENIT*, Tunis, Tunisia,
- *Faculty of Mathematics*, University of Belgrade, Serbia,
- *Faculty of Mechanical Engineering*, University of Belgrade, Serbia,
- *Faculty of Mechanical Engineering*, University of Kragujevac, Kraljevo, Serbia,
- *Institut Industriel du Nord*, Villeneuve d'Ascq, France,
- *Université de Picardie Jules Verne*, Amiens, France
- *University of Illinois*, Urbana-Champaign, Illinois, USA,
- *University of Liege*, Liege, Belgium,
- *University of Lille I*, Villeneuve d'Ascq, France,
- *University of Michigan*, Ann Arbor, Michigan, USA,
- *University of Natal*, Durban, South Africa,
- *University of Notre Dame*, Notre Dame, Indiana, USA,

- *University Paul Sabatier*, Toulouse, France,
- *University of Salford*, Salford, England,
- *Yale University*, New Haven, Connecticut, USA.

### INVITED SCIENTIFIC CONFERENCES (MINI-SYMPOSIUM, SEMINARS)

2011: The Sixth International Conference on Dynamic Systems and Applications, Department of Mathematics, Morehouse College, Atlanta, Georgia, U. S. A., May 25 – 28: invited two lectures

Mini-Symposium by Dr. Lyubomir T. Gruyitch on:

#### ON TIME AND CONSISTENT RELATIVITY THEORY

Time: Properties, Treatment and Physical Relativity –Lecture 1

On the Consistent Mathematical relativity Theory: Collinear Case – Lecture II.

2009: The Faculty of Mechanical Engineering, University of Kragujevats, Kraljevo, Serbia, invited Dr. Gruyitch to give an one-man conference (seminar) composed of six one-hour lectures followed by half-hour discussions on the common topic:

#### TIME

*Properties.*

*Novel relativity theory*

Topics of the lectures were the following:

1. *Time: properties, treatment, and physical relativity.* February 25.
2. *Physical and mathematical continuity. Systems modeling and control. Coordinate transformations.* February 25.
3. *Time, movement, and clock. Einsteinean examples.* February 26.
4. *Lorentz transformations. Physical and mathematical paradoxes and errors of Einstein's relativity theory.* February 26.
5. *Novel, partially compatible but consistent relativity theory: collinear case.* February 27.
6. *Novel, completely compatible and consistent relativity theory: collinear case. General conclusion.* February 27.

2008: The Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia, invited Dr. Gruyitch to give an one-man conference (seminar) composed of eight one-hour lectures followed by half-hour discussions on the common topic:

#### TIME

*Properties of time.*

*Systems modeling and control.*

*Novel, consistent, relativity theory free of all drawbacks of Einstein's theory.*

Topics of the lectures were the following:

7. *Time: properties, treatment, and physical relativity.* November 6.
8. *Time, movement, and clock. Einsteinean examples.* November 7.
9. *Physical and mathematical continuity. Systems control. Coordinate transformations.*

November 13.

10. *Lorentz transformations. Physical and mathematical paradoxes and errors of Einstein's relativity theory.* November 14.
11. *Novel, partially compatible but consistent relativity theory: collinear case.* November 20.
12. *Novel, completely compatible and consistent relativity theory: collinear case.* November 27.
13. *Novel, completely compatible and consistent relativity theory: general time-invariant transformations.* November 28.
14. *Novel, completely compatible and consistent relativity theory: general time-varying transformations. General conclusion.* December 4.

The Faculty of Mathematics, University of Belgrade, Belgrade, Serbia, invited Dr. Gruyitch to give an one-man conference (seminar) composed of eight one-hour lectures followed by half-hour discussions on the common topic:

#### TIME

#### *Mathematical errors of Einstein's and fundamentals of a novel relativity theory*

Topics of the lectures were the following:

1. *Time, movement, and clock. Einsteinean examples.* November 6.
2. *Time: properties, treatment, and physical relativity.* November 10.
3. *Physical and mathematical continuity. Systems control. Coordinate transformations.* November 12.
4. *Lorentz transformations. Physical and mathematical paradoxes and errors of Einstein's relativity theory.* November 17.
5. *Novel, partially compatible but consistent relativity theory: collinear case.* November 18.
6. *Novel, completely compatible and consistent relativity theory: collinear case.* November 24.
7. *Novel, completely compatible and consistent relativity theory: general time-invariant transformations.* November 25.
8. *Novel, completely compatible and consistent relativity theory: general time-varying transformations. General conclusion.* December 1.

The references for these conferences given by Dr. Gruyitch are his books on *time*, on drawbacks of Einstein's relativity theory, and on the new, consistent, relativity theory [B1] – [B3].

### INVITED TO SCIENTIFIC CONFERENCES AND JOURNALS

2006: Invited Organizer of the following invited sessions for the International Conference of Hybrid Systems and Applications, the University of Louisiana, Lafayette, Louisiana, USA, May 22-26, 2006:

#### *Modeling Nonlinear Hybrid Control Systems Control of Nonlinear Hybrid Systems*

and Invited Guest Editor of the Special Issue of *Nonlinear Hybrid Control Systems: Modeling, Dynamics & Synthesis* of the journal *NONLINEAR ANALYSIS: Hybrid Systems and Applications*, Elsevier, 2007.

2005: Organizer of the following four invited sessions for the 17th IMACS World Congress, Paris, France, July 11-15, 2005:

#### *Large scale systems studies*

*Stability and stabilizing control synthesis: new trends  
Time and Multiple Time Scale System  
Tracking theory and control of nonlinear systems*

2004: Invited plenary paper entitled:

*Time, Systems and Control*

presented at the plenary session of the VIII International Workshop *Stability and Oscillations of Nonlinear Control Systems* in commemoration of late **Professor Eugeni Serafimovich Pyatnitskiy**, Moscow, June 2 - 4, 2004. The proceedings will be available on the Internet.

2003: Invited paper entitled:

*Time, Systems and Control: Qualitative Properties and Methods*

at the international Workshop in Honor of **Professor Anthony N. Michel** *Contemporary Issues in Systems Stability and Control with Applications*, Notre Dame, IN, USA, April 5. The book was published by Birkhäuser, New Jersey, 2003.

2001: *The co-organizer and co-chairman with Dr. A. Kökösy of the invited sessions* entitled:

*Tracking Theory and Applications at The Dawn of The New Millennium,  
Tracking Control Performances at The Dawn of The New Millennium,*

the 40<sup>th</sup> IEEE Conference on Decision and Control, Orlando, Florida, USA, December 4 - 7.

2000: Invited paper entitled:

*Gaussian Generalisations of the Relativity Theory Fundaments with Applications* at the International Conference on Physical Interpretations of Relativity Theory - VII, Imperial College, London, September 15 – 18.

Invited paper entitled:

*Systems Approach to the Relativity Theory Fundaments*

and one hour main talk at *the Third World Congress of Nonlinear Analysts*, Catania, Italy, July 19 - 26.

1999: *The organizer and chairman of the invited sessions* entitled:

*Robot Control: High Quality,  
Stability and Stabilization,  
Tracking: Competitive Trends,*

at the 14<sup>th</sup> World Congress of the International Federation of Automatic Control held in Beijing, China, July 5 –9.

1998: *Invited plenary sessions on:*

*A Physical Principle and Consistent Lyapunov Methodology:  
Time-Invariant Nonlinear Systems*

at *the International Conference on Advances in Systems, Control and Computers*, Durban, September 22 - 25, South Africa.

*Consistent Lyapunov Methodology: Global Exponential Stability of Sets*

at *the International Conference on Stability and Oscillations of Nonlinear Control Systems*, Moscow, June 3-5, Russia.

1997: *Invited co-chairman of the session* entitled:

*Robust Analysis I*

of the 1997 IEEE Conference on Decision and Control, San Diego, December.

*President of the International Program Committee, Member of the Organizing Committee and Editor-in-Chief, the IFAC - IFIP - IMACS Conference on Control of Industrial Systems, Belfort, France, May 20 - 22.*

1996: *Invited one hour main lecture:*

*Novel Lyapunov stability methodology for nonlinear systems: complete solutions,*  
the Second World Congress of Nonlinear Analysts, Athens, Greece, July 10-17.

1996: *The organizer of an invited session entitled:*

*Time, Systems and Cybernetics,*  
the 1996 IEEE Conference on Systems, Man and Cybernetics, Beijing, China, October 14-17.

*Invited talk entitled:*

*Comparative Stability Analysis: Concepts and Approaches,*  
the Conference on Stability and Stabilization, Université de Picardie Jules Verne, Amiens, France.

1996: *Invited plenary session on:*

*Stability: Physical and Mathematical Interpretation.*

*The organizer of three invited sessions entitled:*

*Dynamics and Control: Fuzzy and Neural,*

*Stability: Nonlinear Systems,*

*Tracking: Theory and Control Synthesis,*

the IEEE-SMC and IMACS Multiconference CESA'96, Lille, France, July 9-12.

1995: *Invited talk entitled:*

*On Dynamical and Structural Fuzzy Neural Intelligence: Theory and Computing.*  
and *the organizer of two invited sessions entitled:*

*Computing and Dynamical Systems,*

*Computing and Control,*

at the First International Conference on Neural, Parallel & Scientific Computation, Atlanta, USA,  
May 28-31.

1993: *Invited member of the International Program Committee, Organizer and Chairman of the following invited sessions:*

*Stability Domains,*

*Tracking,*

*Robot Control,*

IEEE International Conference on Systems, Man and Cybernetics, Le Touquet, France.

1992: *Invited plenary session on:*

*Complete Exact Solution to the Lyapunov Stability Problem:*

*Time-Varying Nonlinear Systems with Differentiable Motions,*

VI Chetaev Conference, Kazan, Russia, January 20-24.

*General Chairman and Chairman of the Program Committee, The 4<sup>th</sup> Conference on Systems, Automatic Control and Measurement, Kragujevats, Serbia, June 17 - 18.*

1991: *Organizer of the invited session on:*

*Trends in the tracking theory,*

at the 30<sup>th</sup> IEEE Conference on Decision and Control, Brighton, England, December 11-13. It was co-chaired by Ly. T. Gruyitch and W.A. Wolovich, USA. Besides, M. Corles and Ly. T. Gruyitch co-chaired the session on:

*Optimal and nonlinear control systems.*



- 1991: *Organizer and Chairman* of the invited sessions:  
*Lyapunov functions and stability domains,*  
*Qualitative and stability analysis of neural networks,*  
*Tracking theory and applications,*  
 13<sup>th</sup> IMACS World Congress on Computation and Applied Mathematics, Dublin, Ireland, July 22-26.
- 1990: *Invited lecture* on:  
*Qualitative Theory of Neural Networks*  
 with A. N. Michel, International Summer School and Workshop on Neurocomputing: Theory and Applications, Dubrovnik, September 1-10.
- 1990: *Invited Chairman* of the session:  
*Nonlinear Systems,*  
 IEEE International Symposium on Circuits and Systems, New Orleans, Louisiana, USA, May 1-3.
- 1989: *Invited speaker* on:  
*Algebraic Conditions for Absolute Tracking Control of Discrete-Time Lurie Systems,*  
 Mini-Conference on Linear Algebra, Numerical Linear Algebra and Applications, Northern Illinois University, De Kalb, Illinois, USA, April 29-30.
- 1988: *Member of the International Program Committee, Organizer and Chairman* of the following sessions:  
*Large-Scale Systems Stability: Theory and Computing,*  
*Power Systems Stability: Theory and Computing,*  
*Stability, Stabilization and Control,*  
*Tracking versus Stability: Theory and Computing,*  
 12<sup>th</sup> IMACS World Congress on Scientific Computation, Paris, July 18-22.
- 1987: *Organizer* of the 2<sup>nd</sup> International Seminar and Symposium *Automaton and Robot*, Association of Serbia for Automatic Control, Systems and Measurement (SAUM), and Institute for Econometric Expertise (ZEE), Belgrade, October 27 - 29.
- 1985: *Organizer* of the 1<sup>st</sup> International Seminar *Automaton and Robot*, Society for Automatic Control, Systems and Measurement of Serbia (USAUM) and Division for Machine Maintenance (OMO), Belgrade, May 28 - 30.

## CO-OPERATION

### Scientific co-operation

Professor Gruyitch was scientific consultant for seven highest French level doctorate dissertations "Doctorat d'Etat" ("Doctorat es Science"), reporter and member on eight committees for the defense of "Doctorat d'Etat" at the University of Lille I and University Paul Sabatier, on three committees for the defense of D. Sc. dissertations and on three engineering doctorate committees in France. He was also invited to be on the jury for a D. Sc. dissertation in Tunis, June, 1997.

### Journals and Scientific Organizations

#### *Editorials*

Dr. Gruyitch was a member of the Editorial Boards of:

"NONLINEAR ANALYSIS: Theory and Applications"  
Published by Elsevier, London.

"NEURAL, PARALLEL & SCIENTIFIC COMPUTATION"  
published by Dynamic Publishers, USA.

"NONLINEAR STUDIES"  
published by I & S Publishers, USA.

"INTERNATIONAL JOURNAL OF MODELLING & SIMULATION"  
published by IASTED, Canada - Switzerland.

Dr. Gruyitch was a member of the Editorial Board of the "INTERNATIONAL JOURNAL OF SYSTEMS SCIENCE", England, in the eighties.

Dr. Gruyitch was an editorial correspondent member of the "ASME JOURNAL OF DYNAMIC SYSTEMS, MEASUREMENT AND CONTROL", USA.

### **Reviewer**

Dr. Gruyitch was a reviewer of papers submitted to:

"AMERICAN MATHEMATICAL SOCIETY", USA.

"AUTOMATICA"  
published by Pergamon Press - Elsevier, England.

IFAC WORLD CONGRESS  
organized by the International Federation of Automatic Control.

"IEEE TRANSACTIONS ON AUTOMATIC CONTROL" and  
"IEEE TRANSACTIONS ON SYSTEMS, MAN AND CYBERNETICS"  
published by the Institute of Electrical and Electronics Engineers, USA.

IEEE CONFERENCE ON DECISION AND CONTROL  
organized by the Institute of Electrical and Electronics Engineers, USA.

"INTERNATIONAL JOURNAL OF SYSTEMS SCIENCE"  
published by Taylor and Francis, England.

"MATHEMATICS AND COMPUTERS IN SIMULATION"  
published by IMACS.

### **Industrial cooperation**

#### **Non-funded in the USA:**

- *M & M Technologies Inc.*, Columbia, SC.

#### **Funded in Serbia by:**

- 1984-1987     ◦ Process industry *Magnohrom*, Kraljevo, Serbia:  
*Automatic control system design of gas water heaters*,  
Ly. Gruyitch was the principal investigator supervising the three-year research of the whole team (1 Associate Professor, 2 Assistant Professors and several Researchers), Faculty of Mechanical Engineering, Belgrade.
- 1984-1985     ◦ Institute *Mihailo Pupin*, Belgrade:  
*Pneumatic compensators modeling and design*.  
Ly. Gruyitch was the principal investigator supervising the one-year research (1 Associate Professor, 2 Assistant Professors and several Associate Researchers), *Pneumatic compensators modeling and design*. Faculty of Mechanical Engineering, Belgrade.
- 1982-1985     ◦ United electrical power company *ZEP*, Belgrade:  
*Ways of automatic regulation of large thermo-energetic blocks with sliding and constant pressure*.  
Ly. Gruyitch was the principal investigator supervising the three-year research of the teams: for steam boilers (1 Full Professor and 1 Assistant), steam turbines (1 Full Professor, 2 Associate Professors and two Assistants), and automatic control (1 Associate Professor, 2 Assistant Professors and several Associate Researchers), and supervising research on control, Faculty of Mechanical Engineering, Belgrade.
- 1985           ◦ Process industry *Potens*, Sevojno, Serbia:  
*Nonlinear control system analysis of a thermal process*,  
Ly. Gruyitch, Faculty of Mechanical Engineering, Belgrade.
- 1978           ◦ Engineering *Univerzal*, Belgrade:  
*Automatic control system design of air temperature in a room for eggs acclimatization*.  
Ly. T. Gruyitch, Faculty of Mechanical Engineering, Belgrade.
- 1975           ◦ United electrical power company *ZEP*, Belgrade:  
*Automatic control of nuclear power plants*.  
Ly. Gruyitch and B. Miloykovitch, Institute of the Faculty of Mechanical Engineering, Belgrade.
- 1973 - 1974   ◦ *Institute for Material Testing*, Belgrade:  
*Tests of regulators and their equipment of the Hydro-Power Plant Mratinje*.  
Ly. T. Gruyitch, B. Miloykovitch and S. Peyovitch, Institute of the Faculty of Mechanical Engineering, Belgrade.
- 1965           ◦ *Institute of the Faculty of Mechanical Engineering*, Belgrade:  
*Computer simulation of a ship's automatic control system*  
Ly. T. Gruyitch, Institute of the Faculty of Mechanical Engineering, Belgrade.
- 1964           ◦ *Institute for Tools and Tool Machines*, Belgrade, Serbia:  
*Computer simulation of a tool machine dynamics*,  
Ly. T. Gruyitch, Institute of the Faculty of Mechanical Engineering, Belgrade.

## MEMBERSHIP

- 1968 - 2011: *Institute of Electrical and Electronics Engineers, USA: Life Senior Member.*  
#06571822.

- 1977 - 1991,  
2003 - 2010: *American Institute of Aeronautics and Astronautics*, USA: Member. #235479.
- 1981 - 2011: *Association of Serbia for Systems, Automatic Control and Measurement (SAUM - extension of USAUM)*, Serbia: Founding President of USAUM 1981, Founding President of SAUM 1983 - 1985. **Meritorious and Honorary Member.**
- 1985 - 2011: *Society for Industrial and Applied Mathematics*, USA: Member. # 000014617.
- 1998 – 2005: *International Federation of Nonlinear Analysts (IFNA)*, USA: Member.
- 2003 – 2011: *The American Society of Mechanical Engineers*, USA: Member. # 7453939.
- 2007 – 2011: *The American Physical Society*, USA: Member. # 61039445.
- 1995 - 1997: *The Academy of Nonlinear Sciences*, Moscow, Russia: Invited member.
- 1994 - 1996: *The New-York Academy of Sciences*, USA: Invited member.
- 1981 - 1991: *Yugoslav Union for Regulation, Automation and Measurement (JUREMA)* (does not exist anymore): Member of its Presidency 1983 - 1985.
- 1980 - 1994: *American Mathematical Society*, USA: Member.
- 1980 - 1996: *International Federation of Automatic Control*: Member of the Mathematics of Control Committee.

#### INTERNATIONAL BIBLIOGRAPHICAL RECOGNITION / AWARD

- 1988, 1996, 2001,  
2004            *The Marquis Who's Who in the World*, USA.
- 1988            *Men of Achievement*, International Biographical Centre, England.
- 1988, 1996     *Distinguished Leadership Award*, American Biographical Institute, USA.
- 1988            *The Marquis Who's Who in Science and Engineering*, 4th Edition, USA.

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**BOOKS****Linear dynamic systems**

- A2 Ly. T. Gruyitch, *Advances in the Linear Dynamic Systems Theory*, Llumina Press, Tamarac, FL, USA, 2013. ISBN: 978-1-60594-988-8

**Linear dynamic systems**

- A1 Ly. T. Gruyitch, *Tracking Control of Linear Systems*, CRC Press, Boca Raton, FL, USA, 2013: <http://www.crcpress.com/product/isbn/9781466587519>

**Monographs: physics, relativity theory, systems, and systems control**

- B3 Ly. T. Gruyitch *TIME AND TIME FIELDS. Modeling, Relativity, and Systems Control*, Trafford, Victoria, Canada, 2007, ISBN 1-4251-0726-5, <http://www.trafford.com/06-2484>.
- B2 Ly. T. Gruyitch, *TIME. Fields, Relativity, and Systems*, Llumina, Tamarac, Florida, 2006, ISBN 1-59526-671-2, <http://www.llumina.com/store/timefieldsrelativity.htm>.
- B1 Ly. T. Gruyitch, *EINSTEIN'S RELATIVITY THEORY. Correct, Paradoxical, and Wrong*, Trafford, Victoria, Canada, 2006, ISBN 1-4251-0481-9, <http://www.trafford.com/06-2239>.

**Monograph: stability domains theory**

- C1 Ly. T. Gruyitch, J.-P. Richard, P. Borne and J.-C. Gentina, *Stability Domains*, Chapman & Hall/CRC, Boca Raton, USA, 2004.

**Monograph: large-scale systems stability**

- D1 Lj. T. Grujic, A. A. Martynyuk and M. Ribbens Pavella, *Large - Scale Systems Stability under Structural and Singular Perturbations*, (in Russian). Naukova Dumka, Kiev, 1984; in English: Springer Verlag, Berlin, 1987.



**Monograph: pneumatic engineering**

E1 Lj. T. Grujic, and nine co-authors, *Pneumatics*, (in Serbo-Croatian), USAUM Srbije, Belgrade, Serbia, Yugoslavia, 1985.

**Textbooks: control and systems**

F2 Lj. T. Grujic, *Discrete-Time Systems*, (in Serbo-Croatian), Faculty of Mechanical Engineering, Belgrade, Yugoslavia, 1990, 1980.

F1 B. Milojkovic, Lj. T. Grujic, *Automatic Control*, ibid, 1989, 1981, 1977.

**Subsidiary textbooks: control and systems**

G2 Lj. T. Grujic, *Analog Computers*, (in Serbo-Croatian), Faculty of Mechanical Engineering, Belgrade, Yugoslavia, 1981, 1975.

G1 Lj. T. Grujic, *Automatic Control of Air-Conditioning Systems*, ibid, 1976.

**Lecture notes: control and systems (including robotics)**

H11 Ly. T. Gruyitch *Contrôle commande des processus industriels*, University of Technology Belfort - Montbeliard, Belfort, 2002/03.

H10 Ly. T. Gruyitch, *Conduite des systèmes*, University of Technology Belfort - Montbeliard, Belfort, 2000, 2001.

H9 Ly. T. Gruyitch, *Systèmes d'asservissement*, University of Technology Belfort - Montbeliard, Belfort, 2001.

H8 Ly. T. Grouyitch, *Automatique*, University of Technology Belfort - Montbeliard, Belfort, 1999, 2000.

**Lecture notes: control and systems (including robotics) (preceding)**

- H7 Ly. T. Grouyitch, *Robotique*, ibid, Belfort, 1999, 2000.
- H6 Lj. T. Grujic, *Automatique - Dynamique Linéaire*, Ecole Nationale d'Ingénieurs de Belfort, Belfort, 1994 - 1998.
- H5 Lj. T. Grujic, *Robotique*, ibid, Belfort, 1994 - 1998.
- H4 Lj. T. Grujic, *Linear Control*, Department of Electrical Engineering, University of Natal, Durban, South Africa, 1993.
- H3 Lj. T. Grujic, *Nonlinear Control*, ibid, 1993.
- H2 Lj. T. Grujic, *Automatic Control of Hydraulic Power Plants*, Faculty of Mechanical Engineering, Belgrade, Yugoslavia, 1980.
- H1 Lj. T. Grujic, *Optimal Control Systems*, Faculty of Mechanical Engineering, Belgrade, 1972.

**Manual of solved problems: control and systems**

- I1 Lj. T. Grujic, *Problems with Solutions in Automatic Control*, Faculty of Mechanical Engineering, Belgrade, 1980, 1988.

**Book translation from Russian into Serbo-Croatian: Cybernetics**

- JTr1 A. Y. Lerner, *Principles of Cybernetics*, Tehnichka knjiga, Belgrade, 1970, ICS, Belgrade, 1975. Translated by Lj. T. Grujic.

**D. Sc. Dissertation and M. Sc. Thesis**

- JTh2 Lj. T. Grujic, *Large - Scale Systems Stability*, (in Serbo - Croatian), D. Sc. Dissertation, Faculty of Mechanical Engineering, Belgrade, defended 1972, published 1974.
- JTh1 Lj. T. Grujic, *Synthesis of an Automatic Control System of a Rigid Body Motion Through a Fluid*, (in Serbo - Croatian), M. Sc. Thesis, Faculty of Electrical Engineering, Belgrade, 1970.

## CHAPTERS IN BOOKS

### In monograph: qualitative properties and methods

- J1 Ly. T. Gruyitch "Time, Systems, and Control: Qualitative Properties and Methods", Chapter 2 in *Stability and Control of Dynamical Systems with Applications*, Ed's: D. Liu and P. J. Antsaklis, Birkhäuser, Boston, pp. 23 - 46, 2003.

### In monograph: stability theory and applications

- K3 Ly. T. Gruyitch "New Development of Vector Lyapunov Functions and Airplane Control Synthesis", in *Advances in Dynamics and Control*, Ed.: S. Sivasundaram, Chapman & Hall/CRC, Boca Raton, U.S.A., pp. 89-102, 2004.

- K2 Ly. T. Gruyitch, "Consistent Lyapunov Methodology for Exponential Stability: PCUP Approach", *Advances in Stability Theory at the End of the 20<sup>th</sup> Century*, Ed. A. A. Martynyuk, Taylor and Francis, London, pp. 107 – 120, 2003.

- K1 W. P. Mounfield, Lj. T. Grujic and S. Guddanti, "Modelling and Stability of a Truth Maintenance Systems Neural Network", *Neural Networks for Knowledge Representation and Influence*, ed. D.S. Levine and M. Aparicio, IV, Lawrence Erlbaum Associates, Inc. Hillsdale, NJ, pp. 143-174, 1994.

### In monograph: stability theory and tracking theory

- L1 Lj. T. Grujic, "Exponential Quality of Time-Varying Dynamical Systems: Stability and Tracking", Ch. 5, in *Advances in Nonlinear Dynamics*, Vol. 5, editors S. Sivasundaram and A. A. Martynyuk, Gordon and Breach Science Publishers Ltd., Amsterdam, pp. 51 - 61, 1997.

### In monograph: tracking theory

- M1 Lj. T. Grujic, "On the Tracking Problem for Nonlinear Systems", in *Applied Control*, ed. S. Tzafestas, Marcel Dekker, New York, pp. 325-343, 1993.

**In encyclopedias**

- N2 Lj. T. Grujic, "Comparison Systems", *Concise Encyclopedia of Modelling and Simulations*, ed. P. Borne, C. Drayton and D. P. Atherton, Pergamon Press, pp. 62-67, 1992.
- N1 Lj. T. Grujic, "Interconnected Systems: Liapunov Approach", *Systems and Control Encyclopedia*, Pergamon Press, London, pp. 2560-2566, 1987.

**SCIENTIFIC PAPERS*****Reviewed papers published in scientific journals*****Stability theory: general dynamical systems**

- a26 Ly. T. Gruyitch, "Consistent Lyapunov Methodology: Non-Differentiable Non-Linear Systems", *Nonlinear Dynamics and Systems Theory*, Vol. 1, No. 1, pp. 1 - 22, 2001.
- a25 Ly. T. Gruyitch, "Consistent Lyapunov methodology, time-varying nonlinear systems and sets", *Nonlinear Analysis, Theory and Applications*, Vol. 39, pp. 413 - 446, 2000.
- a24 R. Boyekhf and Ly. T. Gruyitch, "Novel development of the Lyapunov stability theory for discrete-time systems. Part I: Concepts and definitions", *Nonlinear Analysis, Theory and Applications*, Vol. 42, pp. 463 - 485, 2000.
- a23 Ly. T. Gruyitch and R. Boyekhf, "Novel development of the Lyapunov stability theory for discrete-time systems. Part II: Stability criteria", *Ibid*, Vol. 42, pp. 487 - 507, 2000.
- a22 R. Boyekhf and Ly. T. Gruyitch, "Lyapunov-Like Solutions to Stability Problems for Discrete-Time Systems on Asymptotically Contractive Sets", *Nonlinear Dynamics*, Vol. 18, pp. 107 - 127, 1999.
- a21 Lj. T. Grujic, "Consistent Lyapunov methodology for time-invariant nonlinear systems", *Avtomatika i Telemekhanika*, (in Russian), No. 12, December, pp. 35 - 73, 1997.
- a20 Lj. T. Grujic, "Novel Lyapunov Stability Methodology for Nonlinear Systems: Complete Solutions", *Nonlinear Analysis, Theory, Methods & Applications: Proc. 2<sup>nd</sup> Second World Congress of Nonlinear Analysts*, Elsevier Science Ltd., Vol. 30, No. 8, pp. 5315 - 5325, 1997.

**Stability theory: general dynamical systems (preceding)**

- a19 Lj. T. Grujic, "New Approach to Asymptotic Stability: Time-Varying Nonlinear Systems", *International J. of Mathematics and Mathematical Sciences*, Vol. 20, No. 2, pp. 347-366, 1997.
- a18 Lj. T. Grujic, "Time-Varying Continuous Nonlinear Systems: Uniform Asymptotic Stability", *International Journal of Systems Science*, Vol. 26, No. 5, pp. 1103-1127, 1995; "Corrigendum", *Ibid*, Vol. 27, No. 7, p. 689, 1996.
- a17 Lj. T. Grujic, "Exact Solutions for Asymptotic Stability: Non-Linear Systems", *Int. J. Non-Linear Mechanics*, Vol. 30, No. 1, 45-56, 1995.
- a16 Lj. T. Grujic, "Solutions to Lyapunov stability problems via O-uniquely Bounded Sets", *Control - Theory and Advanced Technology*, Tokyo, pp. 1069-1091, 1995.
- a15 Lj. T. Grujic, "New Lyapunov Methodology and Exact Construction of A Lyapunov Function: Exponential Stability", *Problems of the Nonlinear Analysis in Engineering Systems*, Kazan, Russia, Vol. 1, pp. 9-16, 1995.
- a14 W. Peruquetti, J.-P. Richard, Lj. T. Grujic and P. Borne, "On practical stability with the settling time via vector norms", *Int. J. of Control*, Vol. 62, No. 1, pp. 173-189, 1995.
- a13 Lj. T. Grujic, "Complete Exact Solution to the Lyapunov Stability Problem: Time-Varying Nonlinear Systems with Differentiable Motions", *Nonlinear Analysis, Theory, Methods & Applications*, Vol. 22, No. 8, pp. 971-981, 1994.
- a12 Lj. T. Grujic, "Solutions to Lyapunov stability problems: nonlinear systems with continuous motions", *International Journal of Mathematics and Mathematical Sciences*, Orlando, USA, Vol. 17, No.3, pp. 587-596, 1994.

**Stability theory: general dynamical systems (preceding)**

- a11 Lj. T. Grujic, "Solutions to Lyapunov stability problems of sets: nonlinear systems with differentiable motions", *International Journal of Mathematics and Mathematical Sciences*, Orlando, USA, Vol. 17, No.1, pp.103-112, 1994.
- a10 Lj. T. Grujic, "Exact Determination of a Lyapunov Function and the Asymptotic Stability Domain", *Int. J. Systems Sc.*, Vol. 23, No. 11, pp. 1871-1888, 1992.
- a9 Lj. T. Grujic, "Solutions to Lyapunov Stability Problems: Nonlinear Systems with Differentiable Motions", *Computational and Applied Mathematics II: Differential Equations*, Ed. W.F Ames and P.J. van der Houwen, Elsevier, Amsterdam, pp. 39-47, 1992.
- a8 Lj. T. Grujic, "On solutions to Lyapunov Stability Problems", *Facta, Universitatis*, Series: *Mechanics, Automatic Control and Robotics*, University of Nish, Serbia, Yugoslavia, Vol. 1, No. 2, pp. 121-138, 1992.
- a7 Lj. T. Grujic, "Solutions to Lyapunov Stability Problems: Nonlinear Systems with Globally Differentiable Motions", *The Lyapunov functions method and applications*, ed. P. Borne and V. Matrosov, J.C. Baltzer AG, Scientific Publishing Co, IMACS, pp. 19-27, 1990.
- a6 Lj. T. Grujic, "Stability Domains of General and Large-Scale Stationary Systems", *Applied Modelling and Simulation of Technological Systems*, Editors: P. Borne and S.G. Tzafestas, Elsevier Science Publishers, B.V. (North Holland), IMACS, pp. 317-327, 1987.
- a5 Lj. T. Grujic, "Stability Domains Concepts" (in Serbo-Croatian), *Automatika*, Vol. 26, No. 1-2, pp. 5-10, 1985.
- a4 Lj. T. Grujic, "Novel development of Lyapunov stability of motion" *Int. J. Control*, Vol. 22, No. 4 pp. 525-549, 1975.

**Stability theory: general dynamical systems (preceding)**

- a3 Lj. T. Grujic, "On practical stability" Proc. 5th ASILOMAR Conf. California, pp. 174-178, 1971; *Int. J. Control* Vol. 17, No. 4, pp. 881-887, 1973. "Practical stability with the settling time", *Automatika-Theoretical Supplement*, pp. 102-106, 1973.
- a2 Lj. T. Grujic, "On practical stability", *Int. J. Control*, Vol. 17, N°. 4, pp. 881-887, 1973.
- a1 Lj. T. Grujic, "Some results on asymptotic stability of motion" *Automatika*, pp. 281-288, 1972.

**Stability theory: Lurie-Postnykov nonlinear systems**

- b12 Lj. T. Grujic and Dj. Petkovski, "On Stability Robustness of Lurie Systems", *Computing and Computers for control systems*, ed. P. Borne et al., J.C. Baltzer AG, Scientific Publishing Co., IMACS, pp. 183-185, 1989.
- b11 Lj. T. Grujic, "Algebraic Conditions for Absolute Tracking Control of Continuous-Time Lurie Systems", *Linear Algebra in Signals, Systems and Control*, ed. B.N. Datta, C.R. Johnson, M.A. Kaashoek, R.J. Plemmons and E.D. Sontag, SIAM, Philadelphia, pp. 535-555, 1988.
- b10 Lj. T. Grujic, "Algebraic Conditions for Absolute Tracking Control of Lurie systems", *Int. J. Control*, Vol. 48, No.2, pp. 729-754, 1988.
- b9 Lj. T. Grujic, and Dj. Petkovski, "On Robustness of Lurie Systems with Multiple Non Linearities", *Automatica*, Vol. 23, No. 3, pp. 327-334, 1987.
- b8 Lj. T. Grujic, and Dj. Petkovski, "Robust Absolutely Stable Lurie Systems", *Intern. Journal of Control*, Vol. 46, No. 1, pp. 357-368, 1987.



**Stability theory: Lurie-Postnykov nonlinear systems (preceding)**

- b7 Lj. T. Grujic, and Dj. Petkovski, "On Robustness of Lurie Systems with a Single Nonlinearity", *Control - Theory and Advanced Technology*, Vol. 2, No.4, pp. 627-632, 1986.
- b6 Lj. T. Grujic, "Lyapunov-like solutions for stability problems of the most general stationary Lurie-Postnikov systems", *Int. J. Systems Sc.*, Vol. 12, pp. 813-833, 1981.
- b5 Lj. T. Grujic, "On absolute stability and the Aizerman Conjecture", *Automatica*, London, Vol. 17, No. 2, pp.335-349, 1981.
- b4 Lj. T. Grujic, "Necessary and sufficient Lyapunov like conditions for the absolute stability and Aizerman conjecture", (in Russian), *Mathematical Physics*, Ukraine, Vol. 28, pp. 7-19, 1980.
- b3 Lj. T. Grujic, P. Borne and J. C. Gentina "Matrix approaches to the absolute stability of time-varying Lurie-Postnikov systems". *Int. J. Control.*, Vol. 30, No. 6, pp. 967-980, 1979.
- b2 Lj. T. Grujic, "Solutions for the Lurie-Postnikov and Aizerman problems", *Int. J. Systems Sc.*, Vol. 9, No. 12, pp. 1359-1372, 1978.
- b1 Lj. T. Grujic, "Une lemme matriciel réciproque, application à la stabilité absolue", *C.R. Acad. Scie.*, Paris, t. 284, Sér. A, pp. 1409-1412, 1977.

**Stability theory: large scale systems**

- c27 Lj. T. Grujic and H. Shaaban, "On Transient Stability Analysis of Large -Scale Power Systems", *Electrical and Power Systems modelling and simulation*, ed. J. Robert and W. Midvidy, J.C. Baltzer AG, Scientific Publishing Co., IMACS, pp. 19-24, 1989.

**Stability theory: large scale systems (preceding)**

- c26 Lj. T. Grujic, "On Large - Scale Systems Stability" *Computing and Computers for control systems*, ed. P. Borne et al., J.C. Baltzer AG, Scientific Publishing Co., IMACS, pp. 201-206, 1989.
- c25 Lj. T. Grujic, "Large - Scale Systems Stability", *Applied Modelling and Simulation of Technological Systems*, Editors: P. Borne and S.G. Tzafestas, Elsevier Science Publishers, B.V. (North Holland), IMACS, pp. 233-247, 1987.
- c24 H. Shaaban and Lj. T. Grujic, "Improvement of large-scale power systems decomposition aggregation approach", *Int. Journal of Electrical Power and Energy Systems*, England, Vol. 8, No. 4, pp. 211-244, 1986.
- c23 Lj. T. Grujic and C. Burgat, "Lotka-Volterra-like approach to large-scale systems stability", *Int. J. Systems Sc.*, Vol. 11. No. 10, pp. 1131-1140, 1980.
- c22 Lj. T. Grujic, M. Darwish and J. Fantin, "Coherence, Vector Lyapunov Functions and Large - Scale Power Systems", *Int. J. Syst. Sc.*, Vol. 10, No 3, pp. 351-362, 1979.
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- Id1 Lj. T. Grujic, "Novel Lyapunov Stability Methodology for Nonlinear Systems: Complete Solutions", *Second World Congress of Nonlinear Analysts*, Athens, Greece, July 10-17, 1996.

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- Ie1 Ly. T. Gruyitch, "Observations on time, systems and control", *Annual Conference of the Academy of Nonlinear Sciences*, Moscow, Russia, June 16 - 20, 1997.

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