

EUROMATH & EUROSCIENCE ASIA 2018

1-4 August 2018, Seoul, S. Korea

Workshops

WS1. THE HIGH ENERGY PHYSICS ADVANCED TECHNOLOGY ABOUT DETECTORS, ACCELERATORS, COMPUTING AND APPLICATIONS

A. Detectors, Accelerators and Computing Technology

B. CERN Transfer Technology and Medical Applications

Abstract: CERN is the European Organization for Particle Physics Research, a world Center of Excellency in basic research and science. Physicists and engineers are probing the fundamental structure of the universe.

The use the world's largest and most complex scientific instruments to study the basic constituents of matter – the fundamental particles.

In the workshop there will be presented the current and future technology of the detectors, accelerators and computing used by the High Energy Physics scientific community.

By Professor Dr. Evangelos Gazis , Professor of Experimental Particle Physics National Technical University of Athens(NTUA) , Greece, Guest Professor of Experimental Particle Physics CERN, Switzerland.

WS2. ARRANGEMENTS IN ORDER

Abstract: The workshop is dedicated to the method of arrangement in order, which is simple but powerful technique in problem solving. Several examples will be considered with arithmetic, algebraic and geometric context.

By Professor Dr Sava Grozdev, VUZF University, Sofia, Bulgaria, member of THALES Foundation

WS3. MATHEMATICS ON THE CHESS-BOARD

Abstract: Many combinatorial problems are connected with the chess-board. Some of them will be discussed during the workshop together with different strategies, coloring and coordinate methods included.

By Professor Dr Sava Grozdev, VUZF University, Sofia, Bulgaria, member of THALES Foundation

WS4. REPUNITS

Abstract: Repunits are the numbers that contain only the digit 1 in their writing, namely numbers of the form $111\dots1$. Several problems with repunits will be discussed during the workshop, including the following one: Find all quadratic polynomials with integer coefficients that transform repunits into repunits. Unsolved problems will be listed too.

By Professor Dr Sava Grozdev, VUZF University, Sofia, Bulgaria, member of THALES Foundation

WS5. PLAY – LEARN - WIN

Abstract: Strategy games are known not only as genuine tools for amusement activities, but also as efficient teaching tools used to stimulate mathematical thinking and to support construction of new knowledge in situations in which students become fully engaged in meaningful learning activities with enthusiasm, curiosity and excitement.

The purpose of the seminar is to meet students with the world of mathematics' games, play these games, propose and analyze "win strategies" and create new games.

By professor Dr Mark Applebaum, Kaye Academic College of Education, Beer Sheva, Israel

WS6. INQUIRY BASED PROBLEMS AS TOOL IN CREATIVE AND CRITICAL THINKING' DEVELOPMENT

Abstract: Most of mathematical tasks that may be found in a school textbook begin with the words: "simplify...", "calculate this..." or "find what is...". In science, however, investigators very often deal with the inquiry based problems, where the main aim is rather to establish whether the object with the given properties exists at all or whether the given assertion is valid in principle, than to simplify or calculate something.

During this seminar students will recognize different methods of solving inquiry based problems, apply these methods, analyze the results and compose new problems.

By professor Dr Mark Applebaum, Kaye Academic College of Education, Beer Sheva, Israel

WS7. IMPROVING MATH SKILLS THROUGH GAMES

Abstract: The purpose of the workshop is to introduce to the participants to a range of games, with mathematical background. These games can help the players in developing mathematical skills such as critical thinking, problem solving, strategic approaches and communication. The whole approach will give emphasis to develop incentives and interest in using mathematics in order to achieve the goals of the games. Furthermore it will give opportunities to the students to design their own games for the reflection of concepts and processes with mathematical content.

By professor Andreas Skotinos, Vice-president , Cyprus Mathematical Society

WS8. DISCOVER AMAZING PUZZLES WITH LOGICAL-MATHEMATICAL EXMPLANATIONS

Abstract: Puzzles offer brilliant and pleasant ways for logical-mathematical considerations of peculiar situations that motivate students for investigation and exploration. Thus they have the opportunity to become interested in mathematics and improve their thinking skills. In the workshop the students will be introduced to a variety of puzzles nad will be given hints and directions on how to approach their solution and to resources for more related material.

By professor Andreas Skotinos, Vice-president , Cyprus Mathematical Society

WS9. MATHEMATICS IN CLASSICAL GREECE AND THEIR CONTRIBUTION TO SOCIETY

Abstract:Through the reference to the historical events and personalities that shape the mathematical content of classical Greece the students will be introduced to the ideas that help the human species to move from the concrete knowledge to the abstract thinking, thus to the building of the mathematical structures. The students will be guided to realize the value of the axiomatic method and will be presented with a number of problems that the ancient Greeks were facing and how they approached them. They are going to be guided to study these ideas and start producing projects dealing with the issues that were the seeds for the foundation of mathematics and some of its major areas.

By professor Andreas Skotinos, Vice-president , Cyprus Mathematical Society

WS10. GEOMETRY PROOFS WITH “GEOGEBRA”

Abstract: Using geometric theorems makes life easier. However Geometric proofs of such theorems are considered to be very difficult.

Can a mathematics software such as Geogebra make proofs easier to understand?

By Dr. Constantinos Papagiannis, Teacher trainer, Ministry of Education and Culture of Cyprus

WS11. INTRODUCTION TO CODING USING PHONE APPLICATIONS

Abstract: Before the modern era, cryptography focused on message confidentiality, conversion of messages from a comprehensible form into an incomprehensible one and back again at the other end, rendering it unreadable by interceptors or eavesdroppers without secret knowledge Encryption attempted to ensure secrecy in communications, such as those of spies, military leaders, and diplomats. In recent decades, the field has expanded beyond confidentiality concerns

to include techniques for message integrity checking, sender/receiver identity authentication, digital signatures, interactive proofs and secure computation, among others.
How to use a simple phone application to write a code .

By Dr. Constantinos Papagiannis, Teacher trainer, Ministry of Education and Culture of Cyprus

WS12. DEVELOP MATH AND SCIENCE COMMUNICATION SKILLS

Abstract: Communication skills are rank 1 among the parameters that employers are considering when they hire new employees. This relates to the fact that we are in the technological era in which the communication of science is becoming important in every day life. In this workshop we will discuss the elements of good math and science communication and do practical work.

By Professor Dr. Gregoris A. Makrides, President of THALES Foundation, President of the Mathematical Society of South-Eastern Europe, President of the Cyprus Mathematical Society

ROUND TABLE DEBATES for pupils

RT1. "Advantages and Disadvantages of Scientific Research"

We invite pupils to participate in this discussion. Two groups will be formed, one group of pupils will be presenting supporting reasoning for advantages and another group of pupils will be presenting supporting reasoning for disadvantages.

Session A. Nuclear Physics

Group 1 : Nuclear Power - Electricity

Group 2 : Negative: Nuclear material waste - Environment

Session B. Advanced Informatics

Group 1 : Web invention and GRID

Group 2 : Fake news, Personal data dissemination in public

Moderator: Professor Dr. Evangelos Gazis , Professor of Experimental Particle Physics National Technical University of Athens(NTUA) , Greece, Guest Professor of Experimental Particle Physics CERN, Switzerland.

RT2. "The Future Classroom – 2030+"

We invite pupils to participate in this discussion. Pupils will be able to discuss their ideas on how they expect the future classroom to be and give their reasoning. All ideas will be reported.

Moderator: Professor Dr. Gregoris A. Makrides, President of THALES Foundation, President of the Mathematical Society of South-Eastern Europe, President of the Cyprus Mathematical Society

RT3. Why a theatrical approach helps in the learning of mathematics or sciences?

We invite pupils to participate in this discussion. Pupils will be able to discuss their ideas why through theatrical plays involving maths and science helps in learning and give their reasoning.

Moderator: Professor Andreas Skotinos, Vice-President of the Cyprus Mathematical Society