

Nesin Mathematics Village

The Nesin Mathematics Village is owned by the Nesin Foundation and is located 1 km away from the village of Şirince (Selçuk district, İzmir). Perched on a hillside and overflowing with greenery, it is a place where young and old learn, teach, and think about mathematics in peaceful seclusion. It is also an ideal environment for various types of work groups and meetings, from teaching at primary school level to the most advanced research, mathematical activities at any level can take place simultaneously in the village.

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Organization

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EMMA in the Mathematics Village

Student Camp
14 – 18 May 2016

Education Days
15 – 17 May 2016

Nesin Mathematics Village
Şirince, Turkey

A workshop of the Sparkling Science Project

**EMMA – Experimentation with
Mathematical Algorithms**

of the University of Salzburg
in cooperation with the Austrian secondary schools

The EMMA Project

Mathematical algorithms play an important role in our highly technologized daily life and show that mathematics is more than just formulas and exhausting theory. Mathematics also means experimenting and gaining knowledge by trial and error. The aim of the EMMA project is to work in close cooperation with students to develop aspects of mathematical algorithmic by means of two ongoing research projects with focus on algorithmic questions. The focus of this cooperation will be on computer experimentations to be carried out in large part by the students, thus forming an important bridge between the students and the involved researchers. This will enable the students to participate directly in the research activities and to provide a valuable contribution. The object of research will be provided by two ongoing research projects in numerical mathematics and in discrete mathematics, which meet modern standards of mathematical sciences. In the first research project numerical solution schemes for variational inequalities are developed and analyzed, the second research project is from the field of discrete mathematics and addresses elliptic curves with high rank and Diophantine tuples. Applications of the research projects can be found for example in crash simulations and data encryption. The cooperation with the students at the affiliated schools HTL Braunau and Akademisches Gymnasium Salzburg is organized on the basis of the optional course "University Mathematics" and the Plus course "Secret Messages", which provide the theoretical basic knowledge and will help establish a concrete framework for the cooperation with the students.

EMMA is funded by the Federal Ministry of Science, Research and Economy of Austria (BMWFW) and is a project of the Sparkling Science research program in which pupils of all levels of education are actively involved in research and support scientists in their scientific work.



Student Camp

The Student Camp is the second workshop for students involved in EMMA. In 2015 the first workshop took place at the Bundesinstitut für Erwachsenenbildung (www.bifeb.at) in Strobl at Lake Wolfgang, Austria. 27 students from the HTL Braunau participated with great commitment. This year the Student Camp will take place in the Nesin Mathematics Village, which offers an optimal environment for activities at the interface between university and school. The Student Camp aims to strengthen the cooperation between the researchers of EMMA and the Austrian students of the affiliated and further secondary schools. Lectures on topics of EMMA will lay the foundations for computer experimentations to be carried out by the students. Together, students and researchers will analyze and discuss the results and will exchange their knowledge and experience in algorithmic mathematics. Being in the Nesin Mathematics Village will give them the opportunity to carry out mathematical research in an exciting cultural setting.



Mathematics in a Nutshell

The lecture series – Mathematics in a Nutshell – will be given in English, thus enabling the Turkish students of the Mathematics Village and other interested persons to participate. The following four lectures will introduce the basic ideas of diophantine equations, i.e. polynomial equations with two or more unknowns and only integer solutions, and of finite elements, which are used to numerically solve partial differential equations resulting, for instance, from problems in mechanical engineering.

Diophantine Equations, Part I and II

Christina Karolus – University of Salzburg, Austria
Christoph Hutle – University of Salzburg, Austria

Finite Elements, Part I and II

Paolo Di Stolfo – University of Salzburg, Austria
Jan Petsche – University of Salzburg, Austria

Education Days

In addition to the Student Camp there will also be the accompanying Education Days, where the emphasis will be on the exchange of ideas between the Austrian and Turkish colleagues. There will be presentations on various topics from the fields of educational research and the opportunity to exchange experiences in mathematical education. As with the coffee breaks the Education Days will serve to promote individual discussions.

The Fundamental Idea of Functional Dependence in Teaching Cryptography at Secondary School Level

Teresa Bachinger – University of Salzburg, Austria

Why Computer Science Matters in School?

Helmut Caba – University of Salzburg/PH Salzburg, Austria

Mathematics Curriculum in Turkey and a Comparison with the CCSS in the US

Evrım Erbilgin – Muğla Sıtkı Koçman University, Turkey

Algorithmic Thinking in the Focus of Mathematics and Computer Science Education

Karl Fuchs – University of Salzburg, Austria

Constructive Solid Geometry in Education

Cornelia Haslinger – University of Salzburg, Austria

Opinions Of Mathematics Teacher Candidates Regarding Micro-teaching Experiences And Their Expectations From School Practice Lessons

Deniz Kılıç – Muğla Sıtkı Koçman University, Turkey

Using Technological Tools in Learning of Mathematics

Melike Yiğit Koyunkaya – Dokuz Eylül University, Turkey

Teaching Programming at Secondary School Level

Cornelia Mayer – University of Salzburg, Austria

How to Solve Variational Inequalities in Secondary Schools

Gregor Milicic – University of Salzburg, Austria

My Humble Experience with Pupils

Ali Nesin – İstanbul Bilgi University, Turkey

Applied Mathematical Programming in MATHCAD

Reinhard Pfoser – HTL Braunau, Austria

On the Use of Technology in Teaching Mathematics at Secondary School Level

Simon Plangg – University of Salzburg, Austria

Cryptography in School Teaching

Ingo Rath – AKG Salzburg, Austria

University Mathematics in Vocational Secondary Schools

Wolfgang Schmid – University of Salzburg, Austria

The Sparkling Science Project EMMA

Andreas Schröder – University of Salzburg, Austria