Books by Our Members

Zijad Haznadar and Željko Štih, *Electromagnetizm* (in Croatian),
Part 1, 420pp; Part 2, 356pp; Školska knjiga, Zagreb 1997.
ISBN 953-0-31686-0

This book gives the reader a complete overview of the classical electromagnetic theory, static, quasi-static fields and electromagnetic waves, together with a presentation of modern numerical procedures for the analysis of electromagnetic problems.

Part 1 - Electromagnetic Theory, Static and Quasistatic

Fundamental electromagnetic field quantities and different forms of equations and models for solving electromagnetic field problems are described in the first chapter. Potential theory is presented in second chapter. The third chapter gives an insight into energy relations and the calculation of forces in electromagnetic fields. Static electric, current and magnetic fields are analyzed in detail in the following three chapters. Different methods of solving static field problems are illustrated by elaborate examples. The seventh chapter describes quasi-static fields which satisfy low-frequency approximation. These fields are usually found in devices for energy conversion and transmission.

Part 2 - Electromagnetic Waves

A detailed description of electromagnetic waves is given in the eighth chapter. It begins with derivation of the plane wave equations and description of the propagation of electromagnetic waves in different materials. These topics are followed by an analysis of the skin effect in conductors, losses in insulators and conductors and dispersion. Following that, propagation of the plane waves in half-bounded spaces, reflection and refraction are explained in detail. Propagation of guided waves through transmission lines waveguides and resonators is also described. The nature and properties of the radiation of electromagnetic waves are explained at the end of this chapter. A detailed insight into the finite element method is given in the ninth chapter. Application of this method is illustrated by a solution of two-dimensional static and quasi-static field examples. The method of moments is explained in the tenth chapter. The application of this method is illustrated by computation of three-dimensional static electric fields, analysis of scattering of electromagnetic waves and solution of Pocklington's equation. The books are intended for electrical and electronic engineers, physicists and applied mathematicians, and are also suitable for undergraduate and postgraduate students of these disciplines.

Boris Andróić, Darko Dujmović, Ivica Džeba, *Beispiele nach EC 3 - Bemessung und Konstruktion von Stahlbauten* (in German),
Warner-Verlag Dusseldorf, 1996, 601 pp.

This is the is the book about a new didactic approach which was developed for teaching the European regulations of steel structure design. The reader can learn about new steel structure design philosophies easily, quickly and effectively. The book is based on many years of educational work and the use of the modern educational program, ESDEP. The book is not meant only for students who are encountering steel structures for the first time, but is also suitable for experts with extensive experience, so that they may familiarize themselves with new discoveries and thereby progress in their profession. The publisher, Werner-Verlag, has included the book on its literature list on the Internet, where more details are available. The book has been included on the list of recommended literature for the education of students in German-speaking countries.

J. Božičević, Ed., *Connectivity and Infrastructure* (in Croatian),
The Croatian Academy of Engineering, Zagreb 1998, 308 pp.

The Proceedings of the Academy's Third Conference with selected 55 papers on the connectivity and co-operability of Croatian infrastructure institutions and regulations to the current praxis in the European Union.

Innovation Results of R&D

Slavomir Stankov from the University of Split and Juraj Božičević from the University of Zagreb have developed an original intelligent tutoring system, TEx-Sys, presently being tested in work with students.

TEx-Sys, the Tutor Expert System, was developed to serve students in learning control principles in nature, society and technics on the basis of the isomorphic model of system. In the instruction system the computer tutor, a substitute for the human tutor, acts as control unit supported by domain knowledge base. It compares the actual student's knowledge with a given reference and performs several actions: delivering knowledge, generating test questions and advising the student.
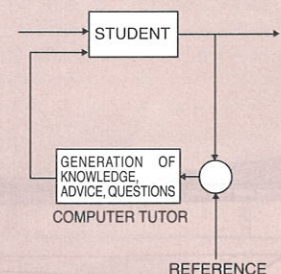
Student interactively, communicates with the tutor and creates knowledge acquisition or a learning process.
First results of testing are very promising. TEx-Sys is transformed in new authoring tool and adapted for use at *www.*