DRUŠTVO ZA TELEKOMUNIKACIJE,
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pozivaju Vas na predavanje:

Naslov: **CAPACITIES OF CHANNELS WITH MEMORIES**
Predavač: Prof. dr ALEKSANDAR KAVČIĆ, University of Hawaii, USA
Vreme: Četvrtak, 3.7.2008., 12:00 časova
Mesto: Sala 61, Elektrotehnički fakultet, Bul. kralja Aleksandra 73, Beograd

Abstrakt:

Over the past 6 decades, information theory was primarily concerned with memoryless communications channels, for which several closed-form channel capacity formulas exist. Furthermore, it is well known that in many memoryless channels, linear block codes achieve the channel capacities, and indeed recent constructions of low-density parity-check (LDPC) codes have demonstrated rates that approach the capacities of many memoryless channels. However, in practice, channels that exhibit memory are much more prevelant. These include disk drives, CD/DVD players, multipath wireless fading channels, optical communication channels, high-speed intra-chip links, wireless relay channels, etc. Deriving closed-form solutions for capacities of channels with memories is notoriously difficult. Even the simplest channels with memory do not admit closed-form solutions. In this talk, we shall reveal a novel, algorithmic approach to computing the capacities of channels with memories. The proposed approaches are numeric, but as in all numerical procedures, one needs to show that the numerical procedures converge. Further, if the procedure can be proven to only produce a lower bound, equally powerful procedures are proposed that deliver very close upper bounds. We will cover several numerical techniques ad show their applicability on several channels with memory. At the end of the talk, we will also show how the capacity computation techniques can be used to construct capacity approaching codes.

BIOGRAFIJA ALEKSANDRA KAVČIĆA

Aleksandar Kavčić received the Dipl. Ing. degree in Electrical Engineering from Ruhr-University, Bochum, Germany in 1993, and the Ph.D. degree in Electrical and Computer Engineering from Carnegie Mellon University, Pittsburgh, Pennsylvania in 1998.

Since 2007 he has been with the University of Hawaii, Honolulu where he is presently Associate Professor of Electrical Engineering. Prior to 2007, he was in the Division of Engineering and Applied Sciences at Harvard University, as Assistant Professor of Electrical Engineering from 1998 to 2002, and as John L. Loeb Associate Professor of Natural Sciences from 2002 to 2006. While on leave from Harvard University, he served as Visiting Associate Professor at the City University of Hong Kong in the Fall of 2005 and as Visiting Scholar at the Chinese University of Hong Kong in the Spring of 2006. He held short-term research positions at Seagate Technology in 1995, Read-Rite Corporation in 1996, and Quantum Corporation from 1997 to 1998. He served as a technical consultant for Quantum Corporation in 1999 and 2000, Agere Corporation in 2004 and Link-A-Media in 2004-2007. He is presently serving on the Advisory Board of Link-A-Media Corporation.

Prof. Kavčić received the IBM Partnership Award in 1999 and the NSF CAREER Award in 2000. He is a co-recipient, with X. Ma and N. Varnica, of the 2005 IEEE Best Paper Award in Signal Processing and Coding for Data Storage. He served on the Editorial Board of the *IEEE Transactions on Information Theory* as Associate Editor for Detection and Estimation from 2001 to 2004, as Guest Editor of the IEEE Signal Processing Magazine in 2003-2004, and as Guest Editor of the IEEE Journal on Selected Areas in Communications in 2008-2009. >From 2005 until 2007, he was the Chair of the Data Storage Technical Committee of the IEEE Communications Society.

S poštovanjem,
Prof. dr Đorđe Paunović