



# Институт по Информационни и Комуникационни Технологии – БАН

Семинар  
„Паралелни Алогоритми и Научни Пресмятания”

На 08 октомври 2013 г. (вторник) от 14:00 в зала 218 на ИИКТ-БАН, ул. Акад. Г. Бончев, блок 25А, **Vassil Alexandrov, ICREA Professor in Computational Science at Barcelona Supercomputing Centre, Barcelona, Spain**, ще изнесе доклад на тема:

## **On Scalability Behaviour of Monte Carlo Sparse Approximate Inverse and Hybrid Algorithms for Matrix Computations**

### **Abstract**

This presentation focuses on Monte Carlo SPAI pre-conditioner. In contrast to the standard deterministic SPAI pre-conditioners that use the Frobenius norm, a Monte Carlo pre-conditioner that relies on the use of Markov Chain Monte Carlo methods to compute a rough matrix inverse (MI) is given. The advantage of this method is that the same approach is applied to sparse and dense matrices and that complexity of the Monte Carlo matrix inversion is linear of the size of the matrix. The behaviour of the proposed algorithm is studied, its performance is investigated and a comparison with the standard deterministic SPAI, as well as the optimized and parallel MSPAI algorithm is made. Further Monte Carlo SPAI and MSPAI are used for solving systems of linear algebraic equation using BiCGSTAB and a comparison of the results is also made.