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How liquid is biological signaling? An investigation into the statistical properties of synthetic protein networks

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Venue: Room **CD634**, Hong Kong Polytechnic University

Reception starts at 4:15pm

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Abstract

The work addresses the problem of phase transitions in random site graphs. Such graphs were recently proposed as more useful abstraction of proteins and their network of interactions than standard graphs. A set of binding reactions between proteins give rise to the stochastic assembly of protein complexes. Based on methods from statistical physics we investigate the dependency of the asymptotic size distribution of such complexes with respect to the site configuration and binding affinities of and between proteins, respectively. To this end we propose a liquidity index of such abstract protein networks that could help to constrain the design space of real protein networks.

About the Speaker

Heinz Koepl obtained his M.Sc. in theoretical physics from Karl-Franzens University Graz, Austria in 2001 (summa cum laude) and his Ph.D. in electrical engineering from Graz University of Technology, Austria in 2004 (summa cum laude). From 2005 to 2006 he was an Erwin Schroedinger postdoctoral fellow at the Department of Electrical Engineering and Computer Sciences at the University of California at Berkeley, USA working together with Prof. Leon O. Chua. Since 10/2006 he is a postdoctoral fellow with the Laboratory of Nonlinear Systems at the School of Communication and Computer Sciences, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland. He received the Fred Margulies Award from the International Federation of Automatic Control (IFAC) for the best Ph.D. thesis.