数学与系统科学研究院学术报告

报告题目: Lyapunov theory and contraction analysis

报 告 人：Rodolphe Sepulchre(Université de Liège)

时间地点：4月15日上午10:00-11:00, Room 703 , Siyuan Building

摘要：

Lyapunov’s second theorem is an essential tool for stability analysis of differential equations. We provide an analog theorem for incremental stability analysis by lifting the Lyapunov function to the tangent bundle. The Lyapunov function endows the state-space with a Finsler structure. Incremental stability is inferred from infinitesimal contraction of the Finsler metrics through integration along solutions curves. The talk will be non technical and will concentrate on the motivations and potential of this approach for systems and control.

报告人简介：

Rodolphe Sepulchre received the engineering degree (1990) and the PhD degree (1994), both in mathematical engineering, from the Université catholique de Louvain, Belgium. He was a BAEF fellow in 1994 and held a postdoctoral position at the University of California, Santa Barbara from 1994 to 1996. He was a research associate of the FNRS at the Université catholique de Louvain from 1995 to 1997. He moved in 1997 to the Université de Liège, where he is

currently professor in the department of Electrical Engineering and Computer Science. He was department chair from 2009 to 2011. He held a visiting position at Princeton University in 2002-2003 and at the Ecole des Mines de Paris in 2009-2010. Since October 2012, he holds a part-time position at

INRIA Lille Europe as the director of the orchestron project. His current research interests are in control and coordination problems on nonlinear spaces, optimization on manifolds, analysis and synthesis of networks of oscillators and rhythmic systems. He co-authored the monographs "Constructive Nonlinear Control" (Springer-Verla, 1997) and "Optimization on Matrix Manifolds" (Princeton University Press, 2008). He is currently Editor-in-Chief of Systems and Control Letters and an Associate Editor for SIAM Journal of Control and Optimization, the Journal of Nonlinear Science, and Mathematics for Control, Signals, and Systems. In 2008, he was awarded the IEEE Control Systems Society Antonio Ruberti Young Researcher Prize. He is an IEEE fellow and an IEEE CSS distinguished lecturer since 2010.