

# **Robust Stochastic Stability of Hybrid Genetic Networks**

## **Abstract**

Gene networks, gaining insight into the underlying processes of living systems at the molecular level, structured by networks of regulatory interactions between DNA, RNA, proteins inhibiting the expression of other genes, have attracted special attention in the past few years. However, many existing results only considered the qualitative or quantitative properties for genetic networks, few results make the combination to get a hybrid picture to describe the gene processes. Therefore, in this report, by taking into account structure variations governed by a Markov chain, and intrinsic and extrinsic noises, sufficient results for robust stochastic stability of hybrid genetic networks will be derived. In addition, how to derive the optimal attenuation level is also discussed.

## **Biography**

SUN Yonghui received his B.S. degree in Applied Mathematics from Henan University in 2004 and M.S. degree in Applied Mathematics from Southeast University in 2007, respectively. He is currently working toward the Ph.D. degree in the Department of Manufacturing Engineering and Engineering Management at City University of Hong Kong, Hong Kong. His current research interests include systems biology, stochastic control, positive systems and impulsive control.