



**Department of Mathematics**  
**The Chinese University of Hong Kong**

數學系  
香港中文大學

Phone: (852) 3943 7988 / 3943 7989 • Fax: (852) 2603 5154 • Email: dept@math.cuhk.edu.hk  
Rm. 220, Lady Shaw Building, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

# Joint Short Course

Department of Mathematics & Institute of Mathematical Sciences, CUHK

## **Analysis of the heat equation on Riemannian manifolds**

***Professor Alexander GRIGOR'YAN***  
**Bielefeld University**

### **Abstract:**

The following topics will be covered.

1. Introduction: Laplace-Beltrami operator and the heat kernel
2. On-diagonal upper bound of the heat kernel and the Faber-Krahn inequality
3. Mean-value inequality for solutions of the heat equation
4. Weighted integral estimates of the heat kernel
5. Pointwise Gaussian upper bound of the heat kernel via the mean-value inequality
6. Pointwise Gaussian upper bound of the heat kernel via the on-diagonal estimate
7. On-diagonal lower bound of the heat kernel via the volume growth

Main reference: The book "Heat Kernel and Analysis on Manifolds"

Date:	25 February 2019 (Monday) 4 March 2019 (Monday) 11 March 2019 (Monday) 18 March 2019 (Monday)
Time:	1:15 p.m. – 3:15 p.m.
Venue:	Room 222, Lady Shaw Building The Chinese University of Hong Kong, Shatin

*All are Welcome!*