HKSTAM

Hong Kong Society of Theoretical and Applied Mechanics

香 港 力 學 學 會

香港科技大學
THE HONG KONG UNIVERSITY OF
SCIENCE AND TECHNOLOGY

Joint HKUST MAE/MATH/HKSTAM Distinguished Seminar

Quadrature of highly oscillatory integrals

Prof. Arieh Iserles

Department of Applied Mathematics and Theoretical Physics
Centre for Mathematical Sciences
University of Cambridge, United Kingdom

Date: **9 October 2015 (Friday)**
Time: **10:30 – 11:30 a.m.**
Venue: Mechanical Engineering Conference Room **2571 B** (via Lift 27/28, 2nd Floor), Academic Building
          Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong.
Enquiry: Dr. Gang Wang, Secretary of HKSTAM, Tel. 2358-7161, E-mail: gwang@ust.hk
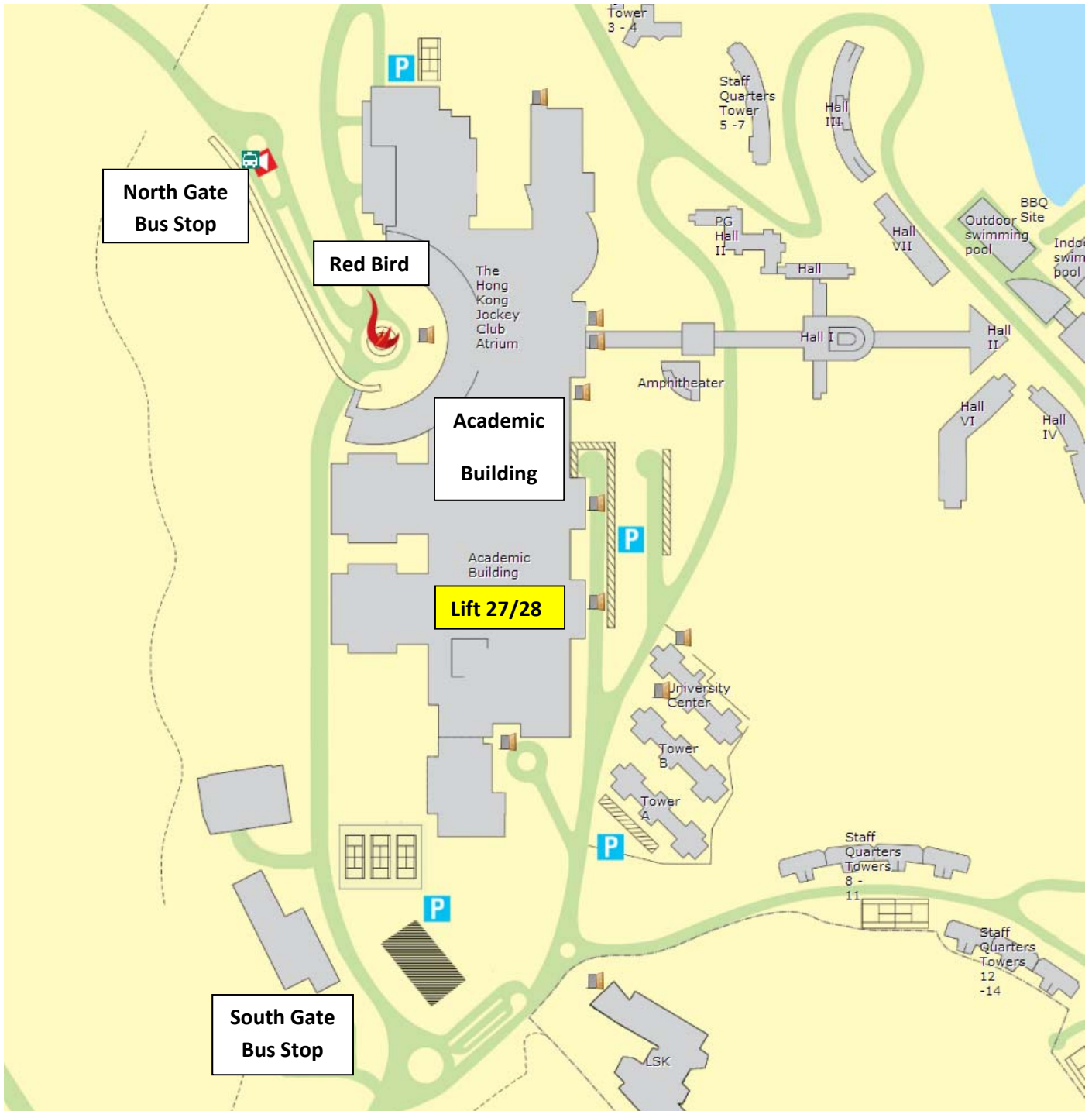
ABSTRACT

The standard belief is that the computation of highly oscillatory integrals is expensive, essentially that the number of function evaluations scales with their frequency. This belief is false and in this talk I will survey in an accessible form a range of recent methods for a very cheap and precise computation of highly oscillatory integrals in one or more variables: the asymptotic method, Filon-type and Levin-type methods, numerical steepest descent and Gaussian quadrature with complex-valued measures.

Biography of Speaker

Prof. Arieh Iserles has recently retired from the Chair in the Numerical Solution of Differential Equations at University of Cambridge. He is a world-class numerical analyst with broad interests in numerical differential equations, approximation theory, fast algorithms, applied analysis and the computation of highly oscillatory phenomena. He has published in excess of 200 papers and his textbook, "A First Course in the Numerical Analysis of Differential Equations", is in wide use worldwide. Arieh Iserles has been awarded the 1999 Lars Onsager Medal, the 2012 David G. Crighton Medal and the 2014 SIAM Prize for Distinguished Service to the Profession. He is the Managing Editor of Acta Numerica, Editor-in-Chief of IMA Journal of Numerical Analysis and an editor of many other journals and book series. Arieh Iserles is a member of EPSRC Strategic Advisory Team for mathematics, Panel PE1 of European Research Council, Physical Sciences Panel of Hong Kong Research Grants Committee and Cambridge University Press Academic Publications Committee. Until a year ago he was the Director of Cambridge Centre for Analysis.

The seminar is jointly organized by HKUST Department of Mechanical and Aerospace Engineering,
Department of Mathematics, and Hong Kong Society of Theoretical and Applied Mechanics

Map and Direction

(1) HKUST Campus map and Lift 27/28

(2) Public transport guide to HKUST   https://www.ab.ust.hk/cso/transport_guide.htm