CoE-MaSS weekly seminar series

THE DST-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL AND STATISTICAL SCIENCES (CoE-MaSS) WOULD LIKE TO PRESENT A SEMINAR BY

Prof JAC Weideman
(Department of Applied Mathematics, Stellenbosch University, Stellenbosch, South Africa)

"Complex Variable Methods in Polynomial Interpolation and Numerical Integration"

Friday, 31 March 2017
10h30-11h30

Broadcast live from:
Videoconferencing Facility, 1st Floor
Mathematical Sciences Building, Wits West Campus

How to connect to this seminar remotely:
You can connect remotely via Vidyo to this research seminar by clicking on this link:
http://wits-vc.tenet.ac.za/flex.html?roomdirect.html&key=y0SSOwFsvsidbzg4qFdWXvvQtyI
and downloading the Vidyo software before the seminar.
You must please join in the virtual venue (called *"CoE Seminar Room (Wits)"* on Vidyo)
strictly between **10h00-10h15**. No latecomers will be added.

Important videoconferencing netiquette:
Once the seminar commences, please mute your own microphone so that there is no feedback
from your side into the virtual room. During the Q&A slot you can then unmute your microphone
if you have a question to ask the speaker.

Title:
Complex Variable Methods in Polynomial Interpolation and Numerical Integration

Presenter:
Prof JAC Weideman, Department of Applied Mathematics, Stellenbosch University, Stellenbosch, South Africa, weideman@sun.ac.za

Abstract:
Many numerical algorithms are based on the approximation of functions by interpolating polynomials. A key question is whether the approximation error goes to zero if the degree of the intepolant is increased, and if so, at what rate? In the case where the function to be approximated can be extended to an analytic function in the neighbourhood of the interval of interest, powerful error estimates can be derived by complex variable methods. In this talk we shall use nothing more than Cauchy's residue theorem to explain two interesting phenomena: the Runge phenomenon, associated with the divergence of polynomial interpolation in equidistant nodes, and the kink phenomenon, the peculiar two-stage convergence rate displayed by Clenshaw-Curtis quadrature.