PROGRAMME

EIGHTEENTH
SOUTH AFRICAN SYMPOSIUM
ON
NUMERICAL MATHEMATICS

DURBAN, 13 - 15 JULY 1992

EIGHTEENTH SOUTH AFRICAN SYMPOSIUM
ON NUMERICAL MATHEMATICS
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Venue: The Tropicana Hotel Conference Centre, Tropicana Hotel, 85 Marine Parade, Durban 4001.
Tel. (031) 374222. Fax (031) 3682322.

Registration: 08:30 - 09:00 on Monday 13 July at the Tropicana Hotel Conference Centre.

Registration Fee: R160 for members of SANUM, and R200 for non members. The fee for bona fide full-time students is R130. This fee covers the use of all conference facilities, attendance at all lectures, a conference programme, summaries of papers to be presented, a copy of the Proceedings, lunches, teas and a buffet dinner.

Proceedings: All participants wishing their papers to be published in full in the Proceedings, should submit two copies, ready for duplicating, to the Secretary of SANUM at the Symposium.

Curriculum Vitae: On registering, all speakers must submit a short curriculum vitae, for use by chairpersons of sessions.

Entertainment: A buffet dinner will be held on Monday 13 July at 19:00.

Sanum AGM: This will take place on Tuesday 14 July at 16:35 in Coral 1 at the Conference Centre.

Enquiries:

- Ms E M Carte, Department of Computer Science, University of Natal, Durban 4001. Tel. 031-8163018.

- Dr S Abelman, Department of Computational and Applied Mathematics, University of the Witwatersrand, P O Wits 2050. Tel. 011-7163298.

AGTIENDE SUID-AFRIKAANSE SIMPOSIUM
OOR NUMERIESE WISKUNDE
DURBAN, 13-15 JULIE 1992

Plek:

Die Tropicana Hotel Konferensiesentrum, Tropicana Hotel, Marine Parade 85, Durban 4001.
Tel. (031) 374222. Faks (031) 3682322.

Registrasie:

08:30 – 09:00 op Maandag 13 Julie in die Tropicana Hotel Konferensiesentrum.

Registrasiegelde:

R160 vir lede van SANUM, en R200 vir nie–lede. Die fooi vir bona fide voltydse studente is R130. Hierdie fooi sluit in die gebruik van alle kongresfasiliteite, bywoning van alle lesings, 'n kongresprogram, opsommings van lesings wat aangebied gaan word, 'n kopie van die Verrigtinge, middagetes, tee en 'n buffetdinee.

Verrigtinge:

Alle deelnemers wat verlang dat hulle referate ten volle in die Verrigtinge gepubliseer word, moet twee kopieë, gereed vir duplisering, aan die Sekretaresse van SANUM by die Simposium oorhandig.

Curriculum Vitae:

By registrasie, moet alle sprekers 'n kort curriculum vitae inhandig, vir gebruik deur voorsitters van sessies.

Onthaal:

'n Buffetdinee word gehou op Maandag 13 Julie om 19:00.

Sanum AJV:

Dit sal op Dinsdag 14 Julie om 16:35 in Coral 1 by die Konferensiesentrum plaasvind.

Navrae:

- Ms E M Carte, Departement Rekenaarwetenskap, Universiteit van Natal, Durban 4001. Tel. 031-8163018.

- Dr S Abelman, Departement Toegepaste Wiskunde, Universiteit van die Witwatersrand, PK WITS 2050. Tel 011-7163298.

PARTICIPANTS - DEELNEMERS

S ABELMAN	*University of the Witwatersrand*
A P AKINOLA	*University of Zimbabwe*
M L BAART	*Potchefstroomse Universiteit vir CHO*
N T BISHOP	*University of South Africa*
E CLOETE	*Overberg Test Range*
H COETZEE	*University of South Africa*
M A COETZEE	*Potchefstroomse Universiteit vir CHO*
K CROUS	*Krygkor*
A DU PLOOY	*Ematek, CSIR*
B FORNBERG	*Exxon Corporate Research*
W GAUTSCHI	*Purdue University*
M GERBER	*Universiteit van Stellenbosch*
K S GOVINDER	*University of Natal*
D GREENBLATT	*Aerotek, CSIR*
A HARIN	*University of Natal*
A E M HENNING	*University of Durban-Westville*
B M HERBST	*University of the OFS*
L JACOBS	*University of the OFS*
M KAUNDA	*University of Cape Town*
A KNOPFMACHER	*University of the Witwatersrand*
P J LAKE	*Aerotek, CSIR*
D P LAURIE	*Potchefstroomse Universiteit vir CHO*
P G L LEACH	*University of Natal*
G J LE ROUX	*Universiteit van die OVS*
D LEVIATAN	*Tel Aviv University*
A LOPIS	*University of the Witwatersrand*
D F B LOUW	*University of the Witwatersrand*
D S LUBINSKY	*University of the Witwatersrand*
S S MAKUMSHA	*University of the Witwatersrand*
J R MIKA	*University of Natal*
M G MOREMEDI	*University of the Witwatersrand*
T NODERA	*Keio University*
O O OGUNTADE	*University of Zimbabwe*
K OSKOLKOV	*Queen's University*
N PARUMASUR	*University of Durban-Westville*
B D REDDY	*University of Cape Town*
I SANDERS	*University of the Witwatersrand*
S W SCHOOMBIE	*University of the OFS*
P SINGH	*University of Durban-Westville*
J H SMIT	*Universiteit van Stellenbosch*
I M SNYMAN	*Krygkor*
J A SNYMAN	*Universiteit van Pretoria*
A SOLOMON	*University of the Witwatersrand*
N STANDER	*Universiteit van Pretoria*
E B SUMMERS	*University of Natal*
O UBBINK	*Krygkor*
M VAN ROOYEN	*University of the Witwatersrand*
V E VERIJENKO	*University of Natal*
D L VOGEL	*Atomic Energy Corporation*
M WALKER	*University of Natal*
H WALLIN	*University of Umea*
C J WRIGHT	*University of the Witwatersrand*

TITLES OF PAPERS – TITELS VAN REFERATE

S Abelman. *Numerical treatment of first-kind Abel integral equations.*

A P Akinola. *On application of asymptotic averaging method in nonlinear elasticity.*

M L Baart. *Cutting the cone.*

N T Bishop. *Progress with the characteristic initial value problem in numerical relativity.*

T Bloom, D S Lubinsky & H Stahl. *The distribution of points in interpolatory integration rules on (-1;1) and* $(-\infty;\infty)$.

E Cloete & B Opperman. *An asynchronous parallel computing algorithm for a nonlinear filter.*

M A Coetzee. *Degree reduction of Bézier curves.*

A du Plooy. *A multigrid method applied to a geo-electrical problem.*

B Fornberg. *Computing steady incompressible flows past blunt bodies – a historical overview.*

W Gautschi. (1) *Applications and computation of orthogonal polynomials.*
(2) *Gauss-type quadrature rules for rational functions.*

M Gerber & J Zietsman. *The numerical treatment of water waves at a caustic of rays.*

D Greenblatt. *Numerical computation of unsteady fully-developed turbulent pipe flow.*

B M Herbst. *On the singularity structure of difference equations.*

Y Hu, D Leviatan & X M Yu. *The degree of convex polynomial approximation.*

M A E Kaunda & J B Martin. *On single-step time-integrators.*

A Knopfmacher. *The* $3x + 1$ *problem.*

P J Lake. *Using symmetries to reduce a 3 - D lattice gas collision table.*

D P Laurie. *An almost trivial way of improving the condition number of linear systems arising from finite element and other methods.*

G J le Roux. *Symplectic integration of a Hamiltonian dynamical system.*

A S Lopis & F M Mahomed. *A linearization algorithm using Reduce.*

D F B Louw. *A spectral element method applied to convection-diffusion equations.*

D F B Louw. *Strategies for playing noughts-and-crosses in an* n^m *hypercube without calculating future moves.*

S S Makumsha. *Computed solutions to the one-dimensional radial Schrödinger equation.*

D P Mason & M G Moremedi. *Limit cycles of a generalised Van der Pol equation using a time transformation method.*

J R Mika & N Parumasur. *Improved multigrid algorithm for numerical solution of ordinary differential equations.*

J R Mika & P Singh. *Iterative evaluation of an approximate inverse.*

T Nodera. *A note on Bi-CGSTAB algorithm.*

O O Oguntade. *On the fuzziness of concentration measures in complex information systems.*

K Oskolkov. *Gauss sums, Schrödinger equation and quantum chaos.*

B D Reddy. *Stability and convergence of enhanced finite element methods.*

R A Renaut & J H Smit. *Stable schemes of maximal order for the wave equation.*

I Sanders & J Pearcey. *A heuristic method for restoring binary images.*

S W Schoombie. *A discrete multiple scales analysis.*

J A Snyman, P S Heyns & P J Vermeulen. *Vibration isolation of a mounted four cylinder V-engine through active balancing and mathematical optimization.*

A Solomon, D P Mason & L O Nicolaysen. *Numerical solution for the dilatation of a porous elastic sphere due to a point source of fluid at the centre of the sphere.*

N Stander & J A Snyman. *The application of a new interior feasible direction method to practical optimization problems.*

E B Summers & V E Verijenko. *Symbolic computation in the numerical analysis of composite plates and shells.*

M van Rooyen. *The optimal trade-off in multi-objective optimization.*

V E Verijenko, S Adali & E B Summers. *Investigation of the convergency of numerical methods applied to nonlinear problems in the mechanics of composites.*

D L Vogel. *A new iteration strategy for the solution of the neutron diffusion equation.*

M Walker & S Adali. *Maximisation of eigenvalues using finite element methods with applications to optimal design of laminates.*

H Wallin. *Continued fractions and generalized dynamical systems.*

C J Wright. *A system of nonlinear partial and ordinary differential equations subject to interior constraints.*