

**P R O G R A M M E**

**FOURTEENTH**

**SOUTH AFRICAN SYMPOSIUM**

**ON**

**NUMERICAL MATHEMATICS**

**UMHLANGA ROCKS, 11, 12 & 13 JULY 1988**

## PARTICIPANTS - DEELNEMERS

### GUESTS

Laurie D P  
Passy U  
Strang G  
Trummer M

PU vir CHO  
Technion, Israel Institute of Technology  
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### DELEGATES

Abelman S  
Baart M L  
Ball G  
Bishop N T  
Bond R A B  
Botha J D  
Cloete E  
Cyrus K  
De Klerk J H  
Du Plooy A  
Enslin J H R  
Eve R A  
Eyre Dr D W  
Geldenhuys Mr J J  
Gorringer Mr V M  
Hackman S  
Herbst B M  
Knopfmacker A  
Lubinsky D S  
Maré E  
Maritz M F  
Mika J R  
Muller E J  
Murray D M  
Nakayama M  
Ramalthape J  
Reddy B  
Rosinger E E  
Schoombie S W  
Shapiro J  
Smit J H  
Snyman I M  
Snyman J A  
Solomon A  
Theron W F D  
Ubbink O  
Van Niekerk F D  
van Niekerk A  
Van Rensburg N F J  
Van Wyk J D  
Venter L M  
Vogel L  
Weideman A  
Weistroffer Roland  
Wright C J  
Yavin Y

Univ Witwatersrand  
PU vir CHO  
AEC  
Univ Witwatersrand  
Univ Natal  
UNISA  
UWC  
Univ Witwatersrand  
PU vir CHO  
CSIR  
Univ Pretoria  
Univ Cape Town  
Univ Witwatersrand  
Univ Pretoria  
Univ Witwatersrand  
Georgia Institute of Technology  
Univ OFS  
Univ Witwatersrand  
CSIR  
CSIR  
Univ OFS  
Univ Natal  
AEC  
SOMKON  
Univ Witwatersrand  
Univ Witwatersrand  
Univ Cape Town  
Univ Pretoria  
Univ OFS  
UNISA  
Univ Stellenbosch  
ARMSCOR  
Univ Pretoria  
Univ Witwatersrand  
Univ Stellenbosch  
AEC  
Univ Pretoria  
Univ Pretoria  
Univ Pretoria  
RAU  
PU vir CHO  
AEC  
Univ OFS  
CSIR  
Univ Witwatersrand  
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# TITELS VAN REFERATE - TITLES OF PAPERS

## NAME

## TITLE

Abelman S and Eyre D

*Rational Multistep Methods for Initial Value Problems*

Baart M L and Rojo H J

*Numerical Experiments with a Limit Stable Second Order Basis for Curved Finite Elements*

Ball G

*The Application of the Collision Probability Method to the Solution of the Integral Transport Equation in Reactor Physics*

Bishop N T

*Numerical Relativity*

Bond R A B and Mika J R

*Approximation of Functions in a Uniform Norm and Numerical Solutions to Fredholm Equations of the Second Kind*

De Klerk J H

*Oplossings van Integraalvergelykings deur middel van  $L_1$ -approksimasies*

Du Plooy A

*A Fourier Transform Applied to a Boundary Integral Equation*

Enslin, J H R and Van der Merwe D F

*Ortogonale Voorstelling van Drywing deur middel van Kwaternione*

Enslin J H R en Van Wyk J D

*Vervormingsanalise in Drywingsnetwerke Uitgaande vanaf Numeriese Korrelasietegnieke*

Eyre D, Wright C J and Viljoen H J

*Solving Dynamic Equations for the Collection and Evaporation of an Aerosol*

Gorringe V M and Leach P G L

*Optimization of the Computational Determination of Eigenvalues for Anharmonic Oscillator Potentials Using the Hill Determinant Method*

Hackman, S, Passy U and First Z

*P-convex Sets and Economic Models*

Herbst B M

*The Numerical Approximation of Physically Unstable Processes*

- |                                   |   |
|-----------------------------------|---|
| Knopfmacher A                     | <i>Representation and Approximation of Power Series via Infinite Products</i>                                     |
| Laurie D F                        | <i>Convergence, Acceleration and Stopping Rules in Automatic Algorithms</i>                                       |
| Lubinsky D S                      | <i>Kronecker's Theorem Revisited: The Pade Table of <math>f(z)</math> is Almost Always Normal</i>                 |
| Maritz M F                        | <i>Using A Discretised Hopf-Cole Transformation to Analyse the Stability of Some Nonlinear Difference Schemes</i> |
| Murray D M                        | <i>Numerical Mathematics and the Recovery of Gold</i>   |
| Ramalhães J, Eyre D and Leach P G | <i>Amplitude-phase Method for Finding Eigenvalues of a Two-dimensional Schrödinger Equation</i>                   |
| Reddy B D                         | <i>Mixed Finite Element Approximations and Reduced Integration Methods</i>  |
| Rosinger E E                      | <i>Towards a Theory of Optimal Accuracy Smoothing</i>   |
| Schoombie S W                     | <i>Spectral Methods for the Korteweg-de Vries equation with Discontinuous Initial Data</i>                        |
| Shapiro J                         | <i>Asymptotic Properties of Statistical Estimators in Stochastic Programming</i>                                  |
| Smit J H                          | <i>A Note on Accuracy Barriers of Stable Two Time Level Difference Schemes for Hyperbolic Equations</i>           |
| Snyman J A                        | <i>The Experimental Performance of a New Constraint Projection Method for Linear Programming</i>                  |
| Strang G                          | <i>A Framework for Applied Mathematics</i>  |
|                                   | <i>An Algorithm Based on the Fast Fourier Transform and Conjugate Gradient</i>                                    |

Theron W F D

*A Discrete Model for Stiff  
Catenaries and Pipelines*

Trummer M

*Stability of Spectral Methods*

~~Numerical Conformal Mapping~~

Van Niekerk A

*An Evaluation of a Control  
Finite-element Method for the  
Convection-Diffusion Equation*

Van Niekerk F D and Van Niekerk A

*A Galerkin Method Using Ra-  
tional Basis Functions*

Venter L M

*An Algorithm for the Solution  
of Systems of Complex Linear  
Equations*

Vogel L

*The Application of the Nodal  
Method in the Solution of the  
Neutron Diffusion Equation of  
Reactor Physics*

Weideman A

*Past*

~~The Eigenvalues of Second-  
order Spectral Differentiation  
Matrices~~

Weistroffer H R

*Nonlinear Multi-criterion Op-  
timization Via Contraction of  
the Acceptable Solution Space*

Wright C J

*An Orr-Sommerfeld Rayleigh-  
Bénard Eigenvalue Problem*

Program      Maandag      11 Julie 1988   Monday      Programme

Lagoon East

Lagoon West

|             |   |                             |
|-------------|---|-----------------------------|
| 08h30-09h00 | Registrasie - Registration                    |                             |
| 09h00-09h10 | Opening - Vice-Principal, University of Natal |                             |
| 09h10-10h10 | D Laurie                                      |                             |
| 10h10-10h30 | T e a - T e e                                 |                             |
| 10h35-11h05 | D Reddy                                       |                             |
| 11h10-11h40 | A van Niekerk                                 | J Ramalho                   |
| 11h45-12h15 | D Murray                                      |                             |
| 12h30-14h00 | Lunch - Middagete                             |                             |
| 14h00-14h30 | S Abelman                                     | J de Klerk                  |
| 14h35-15h05 | J Smit  |                             |
| 15h05-15h30 | T e a - T e e                                 |                             |
| 15h30-16h00 | N Bishop                                      | F van Niekerk/A van Niekerk |
| 16h05-16h35 | C Wright                                      | L Baart E Mare              |
| 19h00       | Braai   |                             |



Program Dinsdag 12 July 1988 Tuesday Programme

Lagoon East

Lagoon West

|             |                            |               |
|-------------|----------------------------|---------------|
| 08h30-09h00 | M Trummer                  |               |
| 09h05-09h35 | M Maritz                   | D Lubinsky    |
| 09h40-10h40 | KEYNOTE SPEAKER : G Strang |               |
| 10h40-11h10 | T e a - T e e              |               |
| 11h10-11h40 | J Enslin/D F vd Merwe      | G Ball        |
| 11h45-12h15 | V Gorringe                 | A Knopfmacker |
| 12h20-12h50 | J Snyman                   | M Baert       |
| 12h50-14h00 | Lunch - Middagete          |               |
| 14h00-14h30 | U Passy                    |               |
| 14h35-15h05 | J D van Wyk/J Enslin       | R Weistroffer |
| 15h05-15h40 | T e e - T e a              |               |
| 15h40-16h10 | J Shapiro                  | S W Schoombie |
| 16h15-16h45 | A Weiden                   | B Herbst      |
| 16h45       | AGM - SANUM - AJV          |               |

Program      Woensdag      13 Julie 1988      Wednesday      Programme

Lagoon East    Lagoon West

| Lagoon West |                       |          |
|-------------|-----------------------|----------|
| 08h30-09h00 | D Eyre                |          |
| 09h05-09h35 | J Mika/Bond           | W Theron |
| 09h40-10h10 | G Strang              |          |
| 10h10-10h40 | Tee - Tea             |          |
| 10h40-11h10 | A du Plooy            | L Venter |
| 11h15-11h45 | E Rosinger            | L Vogel  |
| 11h50-12h20 | <del>A Weideman</del> | DP Laine |
| 12h30-12h50 | Closure/Sluiting      |          |
| 12h45-14h00 | Lunch - Middagete     |          |

ISM'S FINANCIAL SUPPORT OF THIS SYMPOSIUM IS  
GRATEFULLY ACKNOWLEDGED