For the numerical analyst there is a wealth of problems. Frequently, underflow and overflow occur and special tricks have to be used to allow the computation to proceed. Convergence of the iterative method for solving the discrete nonlinear system is usually a problem. The very fine meshes generally used in certain parts of the domain give rise to large discrete systems, and consequently the systems to be solved after linearisation are large. Many standard linear equation solvers, both direct and iterative, are impractical or simply fail for these problems. The development of practical and efficient techniques for solving extensions of these problems to three space dimensions and to the non-stationary case are also needed.

For a representative collection of papers on the subject the reader may consult the five publications [1], [2], [4], [9] and [10] associated with the NASECODE conferences. The first two monographs on the subject are Kurata [3] and Mock [5]. The main journals covering engineering aspects are [6] and [7], while the more computational and mathematical aspects are discussed in journal [8]. The fourth conference in the series, NASECODE IV, will be held in Dublin, Ireland, from June 9th to 21st, 1985.

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Lecture Notes of a Short Course held in association with the NASECODE II Conference, Boole Press, Dublin (1981).

[5] M.S. Mock, Mathematical Analysis of Semiconductor Devices, Boole Press, Dublin (1981).

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[9] J.J.H. Miller (ed.), NASECODE III, Proceedings of the Third International Conference on the Numerical Analysis of Semiconductor Devices and Integrated Circuits, Boole Press, Dublin (1983).

[10] J.J.H. Miller (ed.), Finite Element Programming with Special Emphasis on Semiconductor Device and Process Modelling, Lecture Notes of a Short Course held in association with the NASECODE III Conference, Boole Press, Dublin (1983).

IRISH MECHANICS GROUP

(Conference of the Irish Mechanics Group held at the Dublin Institute for Advanced Studies on 17th April, 1984)

The opening lecture was given by Dr R.K. Li of Trinity College, Dublin, who spoke on "Scalar polynomial linear flow potentials". He was followed by Dr D.W. Reynolds of N.I.H.E. whose topic was "The buckling of viscoelastic rods" and a lecture by Prof. J.N. Flavin of U.C.G. on "Some asymptotic bounds for end-bonded elastic cylinders" brought the first session to a close.

The second session consisted of three lectures. The first one on "Slow perturbations of fast plane shear flow of a

simple fluid" was by Dr J.N. Dunwoody of Queen's University, Belfast, and the second on "Inhomogeneous plane waves" by Prof. M.A. Hayes of U.C.D. Prof. P.M. Quinlan of U.C.C. deputised for Prof. M.M. Carroll of the University of California, who was unable to attend. Prof. Quinlan spoke on "The complex displacement method in elasticity".

The conference was attended by Prof. J. Ericksen of the University of Minnesota who was recently the recipient of an honorary degree from N.U.I.

G. Kelly

GROUPS IN GALWAY 11-12 MAY 1984

A conference on Group Theory sponsored by the Irish Mathematical Society, Royal Irish Academy and University College, Galway, was again held at University College Galway on Friday-Saturday 11-12 May 1984. The main speakers were David Lewis (U.C.D.), Charles Leedham-Greene (Q.M.C. London), Pat Fitzpatrick (U.C.C.), Marty Isaacs (Wisconsin), Ted Hurley (U.C.G.) with further contributions from Rex Dark (U.C.G.), Mark Cartwright (Christ Church, Oxford) and Martin Newell (U.C.G.). A very successful addition to the Conference this year was a Problem Session in which many of the participants contributed a number of unsolved problems for discussion.

David Lewis spoke on the Merkuryev-Suslin Theorem (see article in this issue). This Theorem, concerning the algebraic K-theory and the Brauer group of a field, has only recently (1982) appeared, but has already answered many hard problems in simple algebras, quadratic forms and in algebraic geometry. It is destined to become a classic which people in many areas will find useful. David very eloquently set the scene and led us through an outline of this famous result.

Charles Leedham-Greene spoke on "Space groups and p-groups"

and reported on work by S. McKay, W. Plesken, M.F. Newman and himself. The idea is to classify p-groups according to co-class (if $|G| = p^n$ and G has nilpotency class c then co-class G = n-c). There are 5 co-class conjectures and one of these involving a tremendous amount of hard mathematics has recently been settled by Charles and others.

Pat Fitzpatrick gave an excellent survey of problems, questions and some answers concerning boundedness of conjugacy classes of a finite group in his talk "Some questions on conjugacy". If $m_i = |C(g_i)|$ and $|G| = m_1 \geq m_2 \geq \ldots \geq m_k$, then the idea is to look at k and the m_i and determine properties of G from these (e.g. $m_1 > m_2 > \ldots > m_k$ and G supersoluble $\Longrightarrow$ $G = S_3$).

Marty Isaacs spoke on "Characters of soluble groups". If Π is a set of primes, G* = set of Π-elements in G, the idea is to find a good basis for the vector space of "class functions" of G*. His results can be applied to Π-separable groups. This is a unique approach to this vast area and is certain to lead to new developments.

It is a pleasure to be able to state that the reporter understood every little detail of Ted Hurley's talk "What can you do with a set of variables?"! This surveyed the connections between various objects, groups, Lie Algebras, Polynomial Rings, Power Series Rings, group algebras, varieties and some of the associated problems, e.g. Burnside's, Dimension Subgroup problem, isomorphic group rings problem. Modesty forbids further comment!

Further contributions included Rex Dark "Isotropic tensors and symmetric group algebras" (see I.M.S. Newsletter, December 1983, No. 9); Mark Cartwright "Bounded conjugacy conditions"; and Martin Newell "2-generator groups of exponent $\leq p^3$".

We would like to thank all our speakers, contributors and participants for their continued support and we hope to continue