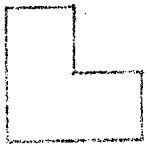
3. If $M,n \in N$ and $t = \min[m,n]$ then

$$\sum_{d=1}^{t} 2^d \binom{m}{d} \binom{n}{d} = \sum_{d=1}^{t} \frac{(m+n-d)!}{(m-d)!\,(n-d)!}\,.$$

These sums arose as different people's solutions of the same problem, which was mentioned by David Singmaster.

4. Some dissection problems. After getting your victim to dissect



into 4 congruent sets

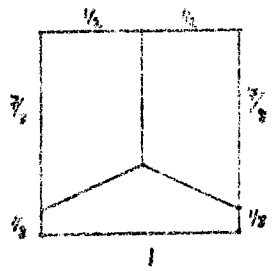
follow up by asking him to dissect the square

into 5. Time taken is inversely proportional to ingenuity!

A genuine problem here is to show that if p is any odd prime then there is only one dissection (apart from rotations) of the square into p congruent, connected sets.

Another hard problem is to decide whether the square can be dissected into an odd number of triangles each having the same area.

Finally, an easier one. If the unit square is dissected into 3 sets, at least one of them has diameter $\geq d = \sqrt{65/64}$. This number is the best possible.



Phil Rippon

REPORT ON THE NASECODE II CONFERENCE

(Communicated by JJH Miller of the Numerical Analysis Group, Dublin)

The second international conference on the Numerical Analysis of Semiconductor Devices and Integrated Circuits, NASECODE II, was held in Trinity College, University of Dublin, Dublin, Ireland from June 17th to 19th, 1981, under the auspices of the Numerical Analysis Group. It was attended by over 100 delegates from 22 countries. The aim of this series of conferences is the fostering of a fruitful exchange of ideas between electronic engineers and numerical analysts.

The industrial sector was strongly represented at this conference, as was the case also at the NASECODE I Conference. Therefore, the problems of computation and numerical analysis discussed are of great practical importance as well as being intellectually challenging.

The application of numerical methods to semiconductor device modeling began about 15 years ago, and since then it has developed and broadened in scope very rapidly. To date relatively few professional numerical analysists have worked in this area, and consequently it is still a fertile source of stimulating unsolved problems of widely varying degrees of difficulty.

The models of technological importance are mainly in two space-dimensions and they may also be time dependent. Typically, two or three nonlinear differential equations have to be solved on complicated domains with a variety of boundary conditions. Computational experience indicates that the systems are often very stiff.

For the numerical analyst there is a wealth of problems. Frequently, underflow 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 three publications (1), (2) and (4) 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 will be discussed in the new journal (8). The third conference in the series, NASECODE III, will be held in Galway, Ireland from 15th to 17th June, 1983; it is cosponsored by the Electron Devices Society of the IEEE and the Irish Mathematical Society.

BIBLIOGRAPHY

(1) J.J.H. Miller (ed). Numerical Analysis of Semiconductor Devices. Proceedings of the NASECODE I Conference. Boole Press, Dublin (1979).

(2) J.J.H. Miller (eds). Numerical Analysis of Semiconductor Devices and Integrated Circuits. Proceedings of the NASECODE II Conference. Boole Press, Dublin (1981).

(3) H. Kurata. Numerical Analysis for Semiconductor Devices. Lexington Books, Massachusetts (1981).

(4) J.J.H. Miller (ed). An Introduction to the Numerical Analysis of Semiconductor Devices and Integrated Circuits, 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 (to appear).

(6) I.E.E.E. Transactions on Electron Devices. The Institute of Electrical and Electronics Engineers, New York.

(7) Solid-State Electronics - An International Journal. Pergamon Press, Oxford.

(8) COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering. Boole Press, Dublin.

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GROUPS IN GALWAY

This year, the Group Theory Conference was again held in Galway on May 14 and 15. It was a highly successful event with participants (24) and speakers from Ireland, Britain and Australia. The programme consisted of hour long talks by :

R.A. Bryce (Q.M.C./A.N.U.), A. Christofides (E.C.G.), P. Fitzpatrick (U.C.C.), and B. Siefert (U.C.D.) together with shorter talks by N. Barry (Carysfort), T.C. Hurley (U.C.G.), J.D. Key (Birmingham), J. McDermott (U.C.G.), J. Siemons (U.C.C.), and A. Williamson (U.C.G.).

Originally Jan Saxl (Cambridge) was scheduled to talk but due to a bereavement was unable to travel.

The talks, formal and informal, produced much discussion, some new results were announced and many ideas were exchanged. As usual, the social events stimulated the Mathematics and contributed to the enjoyment of the occasion. As usual, also, it never rains and the sun always shines on I.M.S. Groups.

We are grateful to Ray Ryan for this years' group(!) photograph. Unfortunately, two of our Dublin colleagues were omitted as their car broke down. They eventually arrived but too late for the photograph. We hope to insert their photographs so they will not be lost to posterity. This event is too important for people not to have their cars serviced the week before!

Martin Newell and his colleagues are to be congratulated for organising this, by now, annual get-together of Algebraists.

Go mbeirimid beo ar an am seo arís.

TED HURLEY