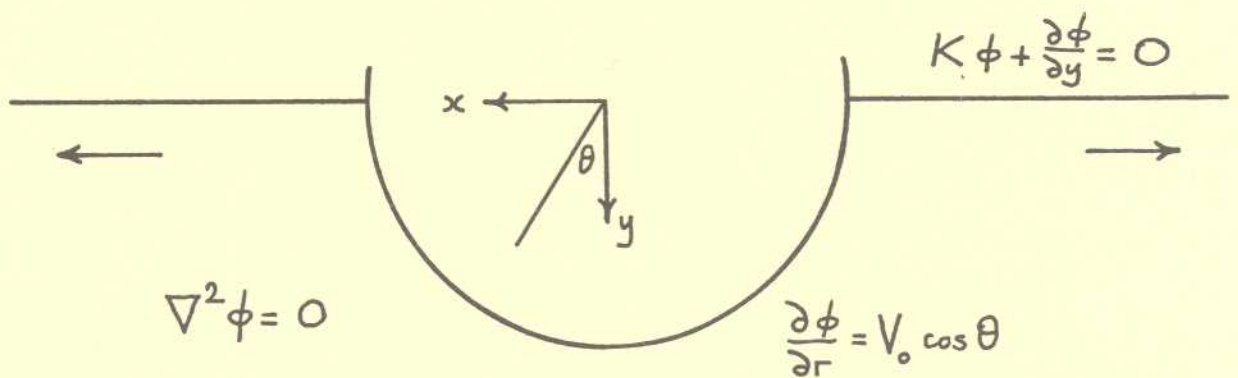


THE FIFTH
INTERNATIONAL WORKSHOP
ON WATER WAVES
AND FLOATING BODIES



NEEDHAM HALL, DIDSBURY
MANCHESTER, ENGLAND
25-28 March, 1990

PARTLY SPONSORED BY

THE MARINE TECHNOLOGY DIRECTORATE LIMITED



THE FIFTH INTERNATIONAL WORKSHOP ON WATER WAVES AND FLOATING BODIES

Edited by

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Sponsored by

The Marine Technology Directorate Limited, British Maritime Technology Limited and the Research Support Fund of the University of Manchester.

ABSTRACT

A workshop was held at Needham Hall, University of Manchester, on 25th-28th March 1990 for specialists performing theoretical research on the interactions of water waves with floating or submerged bodies.. This report contains extended abstracts of the papers presented, together with a summary of the discussion.

Price: £10, including postage.

INTRODUCTION

The Fifth International Workshop on Water Waves and Floating Bodies was held in Needham Hall, University of Manchester, from 25–28 March, 1990. This report contains the proceedings of the Workshop, consisting of extended abstracts of all the papers presented together with some of the discussion which took place following the talks (as submitted in written form to the editor). The abstracts are arranged in alphabetical order of the first-named author. Also included is a full list of titles and authors, plus a list of participants' names and addresses (with electronic-mail addresses where available).

A total of 49 papers were presented at the Workshop. As at previous Workshops (First: MIT; Second: Bristol; Third: Woods Hole; Fourth: Øystese), a high standard of presentation and content of papers was maintained and a lively level of discussion prevailed throughout, both inside and outside the lecture room, and in the public houses of Didsbury.

The primary sponsor of the Fifth Workshop was the Marine Technology Directorate Ltd.; additional support was provided by British Maritime Technology Ltd. These grants enabled us to meet about 80% of the total amount requested in order to participate in the Workshop. We also received a grant from the Research Support Fund of the University of Manchester, which was used to cover some of the costs of producing and distributing this report and the book of preliminary abstracts. We would like to express our thanks to all our sponsors for their generous support.

The prestige of the Workshops continues to grow, resulting in more excellent submitted abstracts than can be easily accommodated within a 75-hour meeting. Last year this difficulty was overcome by introducing parallel sessions for part of the meeting. We chose a different route: 25-minute slots (instead of 30), and a more precise scope, emphasising the meeting's title. This meant that the program was intense (16 talks on a full day); all participants could listen to all the talks; but the durations of the intervals were not reduced. As organisers we felt that these arrangements would be conducive to a fruitful Workshop: there were no complaints! Of course organisers of future Workshops may wish to experiment further with the format.

Copies of the Reports on all the earlier Workshops are available as follows: First and Third, \$10 from Nick Newman; Second, £5 from David Evans; and Fourth, NOK 100 from John Grue.

The Sixth International Workshop on Water Waves and Floating Bodies will be held at Woods Hole, Massachusetts, U.S.A., from Sunday 14th April until Wednesday 17th April, 1991. The Seventh Workshop is expected to be held in Normandy, France, in 1992.

F. Ursell



Prof. Fritz Ursell

Dr. Paul Martin

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LIST OF PRESENTATIONS

1. T.R. Akylas & J. Mathew: 'Finite-amplitude edge waves'.
2. A. Anderson, D.A. Diver & D.H. Peregrine: 'Slender, steep and breaking water waves'.
3. P. Andersson: 'An experimental study of surface waves generated by submerged bodies'.
4. T.S. Angell & R.E. Kleinman: 'Some questions in optimal design of floating bodies'.
5. V. Bertram: 'A Rankine source approach to forward speed diffraction problems'.
6. A.S. Bonnet & P. Joly: 'Mathematical and numerical study of trapping waves'.
7. M.A. Callan: 'Trapping modes above non-cylindrical bodies'.
8. F.P. Chau & R. Eatock Taylor: 'A comment on the second order diffraction potential for a vertical cylinder'.
9. X.B. Chen & B. Molin: 'High frequency interactions between TLP legs'.
10. H.H. Chun, R.C. McGregor & N.S. Miller: 'Prediction of the added resistance of a SWATH ship'.
11. J.M. Clarisse: 'Thirty years after... : the evaluation of the single integral part of the Kelvin wave source potential in the far-field'.
12. R. Cointe: 'Hydrodynamic impact analysis of a cylinder: modelling the jet'.
13. M.J. Cooker & D.H. Peregrine: 'A model of the shock pressures from breaking waves'.
14. K. Dgaygui & P. Joly: 'Absorbing boundary conditions for linear gravity waves'.
15. K. Eggers: 'On the breakdown of ship wave ray tracing near the bow'.
16. G. Flaten & E. Palm: 'Dissipation and diffraction of an incoming wave due to a submerged, horizontal, permeable, circular cylinder'.
17. A. Friis: 'Second order diffraction forces on a submerged body by second order Green function method'.
18. M. Greenhow: 'Water exit of slender and non-slender bodies'.
19. J. Grue & E. Palm: 'Mean forces on floating bodies in waves and current'.
20. C. Hazard & M. Lenoir: 'Numerical computation of resonant states for the 2-D linear sea-keeping problem'.
21. C. Hu & R. Eatock Taylor: 'Motions of 2D bodies at small forward speed'.
22. A.C. King: 'Some aspects of free surface flow over a submerged body'.
23. F.T. Korsmeyer: 'An order N algorithm for the solution of the boundary integral equations of potential flow'.
24. J.R. Krokstad: 'Second-order wave forces and moments in multidirectional seas'.
25. C.H. Lee: '(Kochin-type) second-order wave exciting forces'.
26. C.M. Linton & D.V. Evans: 'Compressed air breakwaters'.
27. P.A. Martin: 'Oscillating immersed plates and hypersingular integral equations, II'.
28. P. McIver & M.J. Simon: 'Wave scattering by a vertically axisymmetric body in a channel'.
29. E. Mehlum & B. Spjelkavik: 'Strongly nonlinear waves in a tapered channel'.

30. T. Miloh: 'Oblique water entry of spherical shapes with special reference to the ricocheting phenomenon'.
31. B. Molin: 'On the added mass and damping of porous cylinders-non harmonic motion'.
32. J.S. Pawlowski & D.W. Bass: 'The development of a time domain simulation method for the prediction of scattering forces and large ship motions in waves'.
33. D.H. Peregrine & M.J. Cooker: 'Computations of waves breaking against a vertical wall'.
34. C.P. Pesce & J.A.P. Aranha: 'Families of trial functions for the three-dimensional variational method on wave-body interaction problems'.
35. D. Pizer: 'Low frequency motions of semisubmersibles'.
36. R.C.T. Rainey: 'Energy arguments under a "wavy lid"-a new approach to capsizing and other highly nonlinear problems'.
37. H.C. Raven: 'The negative wave resistance paradox in Dawson's method'.
38. W.W. Schultz, Y. Cao & R.F. Beck: 'Three-dimensional nonlinear wave computation by desingularized boundary integral method'.
39. P.D. Sclavounos: 'The slow-drift oscillation of a floating body'.
40. R.G. Standing: 'Some problems in predicting low-frequency motion damping and response of floating offshore structures'.
41. G.P. Thomas: 'Wave diffraction by an array of cylinders in a channel'.
42. M.P. Tulin, A. Kolaini & H. Qu: 'Short-crested waves in the laboratory and related phenomena'.
43. P.A. Tyvand: 'A strong vortex placed near a free surface'.
44. F. Ursell: 'Some unfinished and unsolved problems in the linear theory of water waves'.
45. C. van der Stoep & A.J. Hermans: 'The influence of a slowly oscillating movement on the velocity potential'.
46. G.X. Wu: 'Hydrodynamic forces on a submerged cylinder advancing in waves of finite water depth'.
47. R.W. Yeung & M. Vaidhyanathan: 'Nonlinear wave diffraction over submerged obstacles'.
48. Y. Zang, A. Nestegard & T. Vada: 'Motions of surface effect ships'.
49. R. Zhao & O. Faltinsen: 'Seakeeping of high-speed vessels'.