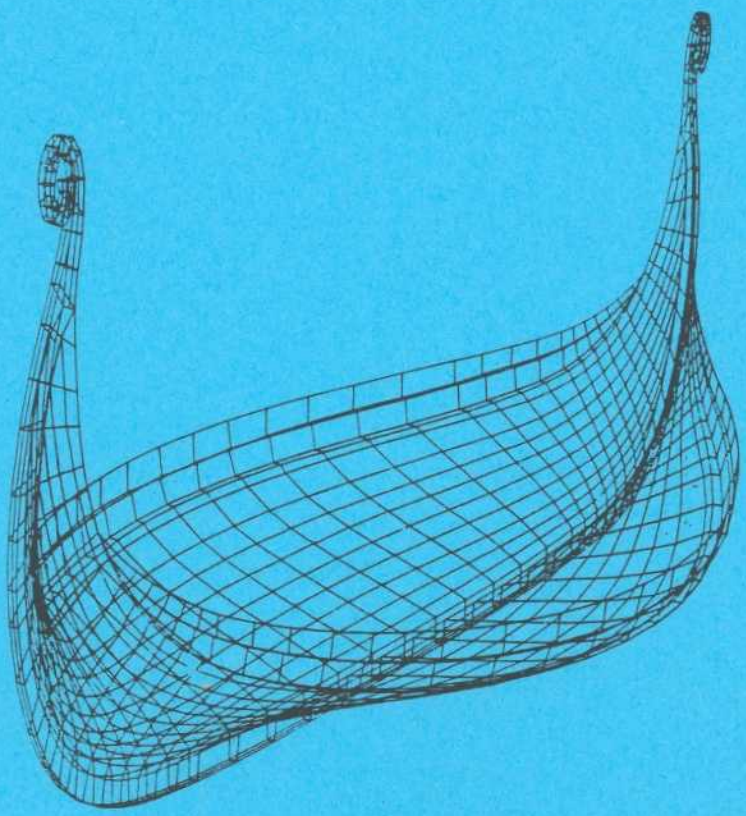
THE FOURTH

INTERNATIONAL WORKSHOP ON WATER WAVES AND FLOATING BODIES



Hardangerfjord Hotel

Øystese, Norway

May 7-10, 1989

ISBN 82-553-0671-4

THE FOURTH INTERNATIONAL WORKSHOP on WATER WAVES AND FLOATING BODIES

J. Grue, Editor

Department of Mathematics
University of Oslo
Blindern, Oslo, Norway

Sponsored by

Aker Engineering, Conoco, Kvaerner Engineering, Norsk Hydro, Norwave, Royal \ or-wegian Council for Scientific and Industrial Research (NTNF), Saga Petroleum, Statoil, the Norwegian Research Council for Science and the Humanities (NAVF), University of Oslo.

ABSTRACT

A workshop was held at Hardangerfjord Hotel, Oystese, Hardanger, Norway on 7-10 May 1989 for specialists performing theoretical research on the interactions of water waves with floating and submerged bodies. This report contains extended abstracts of the presentations and summaries of the discussions.

Price: NOK 100 (including surface mail).

TABLE OF CONTENTS

Introduction

The Fourth International Workshop on Water Waves and Floating bodies was held at Hardangerfjord Hotel, Oystese, Hardanger, Norway from 7.-10. May 1989. This report contains abstracts of the presentations at the workshop, together with the recorded discussions. The abstracts are arranged in alphabetical order of the first-named author. Also included is a list of titles and authors, and a list of the participants' names and addresses.

In addition to the papers presented at the regular sessions, an Evening Session was held on the 8th. Three representatives from industry presented trends and problems from within the activities of their respective companies.
Birger Natvig, Aker Engineering, spoke on "Sum-Frequency Excitations in TLP design" (TLP = Tension Leg Platform),
Jacques Lassabliere, Kvxrner Engineering, spoke on "Water Waves related Problems: An Industry related Outlook" and finally,
Finn Gunnar Nielsen, Norsk Hydro, spoke on "Some Trends in the North Sea offshore activity. Possible challenges within marine hydrodynamics".
All three presentations were very relevant to the topics of the workshop. Vice versa, they made the practical relevance of the theoretical work performed by the participants of the workshop, rather evident.

Financial support for the Fourth Workshop was provided by a number of Norwegian organizations and companies. In sum the support was rather generous, so that it became possible to offer a fairly good coverage of travel and living expences for the participants. This kind of sponsorship is felt to be rather important for the workshop. It makes it possible not only for well established researchers with healthy budgets to participate. The organizers and particpants are therefore very grateful to the sponsors, former, present and future.

The prestige of the workshop is obviously very high. The number of abstracts has grown each year. Excellent contributions are presented by highly respected researchers from many countries. This year the organizers were thus confronted with the luxury dilemma of having to put up parallell sessions within the limits of a three day program. The alternative would have been to reject a great many excellent abstracts. This dilemma is very likely to stay, and will have to be dealt with by future organizers.

The enthusiasm and cooperation of the participants are very gratifying to the organizers. It is also typical for the workshops that loose scientific ends from a former year are taken up and often solved in a contribution presented at the next. This fact is perhaps the best proof that the workshop style created by Dave Evans and Nick Newman is "LIV LAGA".
(LIV LAGA = "Meant for continued life")

Copies of the First and Third Workshop Reports are available from Professor Newman ($10 including surface post) and copies of the Second Workshop Report are available from Professor Evans (£5 including surface post).

The 5th International Workshop on Water Waves and Floating Bodies will be held at the University of Manchester, England, from Sunday 25th March until Wednesday 28th March, 1990.

Dr. philos. Even Mehlum
NORWAVE A.S, Oslo

Professor Enok Palm
University of Oslo

LIST OF PRESENTATIONS

1. Akylas, T. R. and Mathew, J. Excitation of upstream nonlinear wave disturbances by a ship moving in a shallow channel with sloping side walls.
2. Ando, S. Forward-speed effect in head-wave diffraction over the forebody of a slender hull.
3. Bertram, V. Nonlinear steady ship wave problem for a SWATH ship.
4. Bridges, T. J. and Dias. F. Group-theoretic considerations lead to new solutions of the water wave problem.
5. Callan, M. A. Trapping modes above bodies in finite depth.
6. Cao, Y., Schultz, W. W. and Beck, R. F. Numerical investigation on the desingularization of boundary integral equation for three dimensional potential problems.
7. Chau, F. P. An expansion of the source potential and its applications.
8. Cointe, R. Waves traveling over a submerged cylinder: Nonlinear vs. second-order theory.
9. Cooker, M. J., Peregrine, D. H. and Vidal, C. Experiments and computations of solitary wave action on a submerged obstacle.
10. da Silva, A. F. T. and Peregrine, D. H. The nonlinear interaction between a free surface potential flow and a submerged cylinder.
11. Eatock Taylor, R. Is there an inconsistency in the treatment of low frequency second order forces?
12. Evans, D. V. The wide-spacing approximation applied to multiple scattering and sloshing problems.
13. Falnes, J., 01tedal, G., Budal, K. and Lillebekken, P. M. Simulation studies of a, double oscillating water column.
14. Fernandes, A. C. Some corollaries for the study of two dimensional bodies in waves.
15. Greenhow, M. Hydrodynamic considerations for the design of pipe-bridges.
16. Grilli, S. and Svendsen, I. A. Runup and reflection of a solitary wave on steep slopes in a numerical wave tank.
17. Grue, J. Nonlinear waves at an underwater breakwater.

18. Hearn, G. and Lioo, S.. Y. Eigenfunction expansion techniques applied in open and confined waters.

19. Hu, C. S. and Eatock Taylor, R. A small forward speed perturbation method for wave-body problems.

20. Joo, S. W., Messiter, A. F. and Schultz, W. W. The effect of viscosity and surfactant on nonlinear water waves.

21. Kashiwagi, M. Theoretical prediction of tank-wall effects on hydrodynamic forces acting on an oscillating and translating slender ship.

22. Kleinman, R. Iteration for water wave integral equations.

23. Korsmeyer, F. T. and Tuck, E. 0. Marching toward a slender ship wave resistance theory.

24. Lee, C. H. Second-order wave forces on floating bodies.

25. Lenoir, M. and Verriere, M. Computation of transient linearized gravity waves.

26. Linton, C. M. and Evans, D. V. The scattering of waves by vertical cylinders.

27. Magee, A. R. and Beck, R. F. Vectorized computation of the time-domain Green function.

28. Martin, P. A. On the computation and excitation of trapping modes.

29. McCreight, W. R. Reflection coefficients due to open boundary conditions.

30. McIver, P. Low-frequency wave forces on multi-element structures.

31. Mehlum, E. A note on the shallow water wave theory.

32. Miloh, T. and Tulin, M. P. Non-linear long interfacial waves due to a disturbance moving in a thin thermocline.

33. Molin, B. On the added mass and damping of porous or slotted cylinders.

34. Nakos, D. E. Free surface panel methods for unsteady forward speed problems.

35. Newman, J. N. An asymptotic solution of the second-order diffraction problem.

36. Noblesse, F. A new expression for the steady wave spectrum of a ship.

37. Nossen, J., Palm, E. and Grue, J. On the solution of the radiation and diffraction problems for a floating body with a small forward speed.

38. Ohkusu, M. and Iwashita, H. Evaluation of the Green function for ship motions at forward speed and application to radiation and diffraction problems.

39. Pawlowski, J. S. and Waclawlek. P. Hydrodynamic forces on shallowly or partly submerged 2-d bodies.

40. Perdigao, J. N. M. and Sarmento, A. J. N. A phase control strategy for OWC devices in irregular seas.

41. Raven, H. C. Accuracy of free surface conditions for the wave resistance problem.

42. Schultz, W. W. and Huh, J. Spectral boundary integral method for gravity capillary waves.

43. Sclavounos, P. D. The slow-drift wave damping of floating bodies.

44. Scolan, Y. M. and Molin, B. Second-order deformation of the free-surface around a vertical cylinder - part 2.

45. Soding, H. and Bertram, V. Dynamic sinkage and trim of ships on shallow water.

46. Tsai, W. T. and Yue, D. K. P. Regular and chaotic wave motions in a rectangular wave tank.

47. Ursell, F. On the near field of a kelvin source in the free surface.

48. Vinje, T. On small-time expansion of non-linear free surface problems.

49. Wehausen, J. Causality and the radiation condition 2.

50. Wu, G. X. and Eatock Taylor, R. Hydrodynamic forces on a submerged sphere moving in a circular path.

51. Xu, H. and Newman, J. N. Potential flow for a yawed surface-piercing flat plate.

52. Yeung, R. W. and Ananthakrishnan, P. Solution of nonlinear water-wave and wave-body interaction problems using a new boundary-fitted coordinates method.

53. Zhao, R. and Faltinsen, 0. A discussion of the m-terms in the wave-body interaction problem.