

KdV '95

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM
HELD IN AMSTERDAM, THE NETHERLANDS, 1995

KdV '95

Proceedings of the International Symposium
held in Amsterdam, The Netherlands, April 23–26, 1995,
to commemorate the centennial of the publication
of the equation by and named after
Korteweg and de Vries

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Preface

The now famous paper “*On the Change of Form of Long Waves Advancing in a Rectangular Canal and on a New Type of Long Stationary Waves*” by D. J. Korteweg and G. de Vries appeared in the *Philosophical Magazine* a century ago. For the board of the Dutch Association for Mathematical Physics, this centennial is a welcome opportunity to commemorate the event with an international symposium on those developments in mathematics and physics that have their roots in what is now known as the Korteweg–de Vries equation. The circumstances that Korteweg held the chair of mathematics and mechanics at the University of Amsterdam from 1881 until 1918 and that de Vries wrote his thesis on the above-mentioned long waves under the supervision of Korteweg are motives to organize this symposium in Amsterdam.

The new type of long stationary waves were called cnoidal waves (in analogy with sinusoidal waves) by Korteweg and de Vries. In the particular case that the modulus of the Jacobian elliptic function equals one, the wave takes the form of the “rounded, smooth and well defined heap of water”, discovered by Scott Russell in 1834 and coined much later in 1965 by Zabusky and Kruskal as the *soliton*.

Meanwhile, it has become commonplace to state that the rediscovery of the soliton by Zabusky and Kruskal precursed a breakthrough in nonlinear analysis and mechanics. Besides a better understanding of nonlinear wave phenomena this also brought new important developments in the theory of completely integrable systems.

The board of the Dutch Association of Mathematical Physics and the organizing scientific committee are pleased with the response of many mathematicians and physicists to the invitation to participate in the symposium; in particular we thank those participants who have contributed to the symposium by giving a lecture or presenting a poster.

A very fascinating feature of the theory of solitons lies in the application of many branches of mathematics, such as analysis, differential geometry, algebraic geometry, topology and infinite-dimensional algebraic structures. Apart from this, one should also mention a multitude of applications in physics, for instance in statistical mechanics, point mechanics, hydrodynamics, optics and field theory. These proceedings reflect all these aspects and are in line with the aims and scope that the scientific committee had in mind. Besides this, attention has also been paid to the interesting history of solitons.

The symposium has been held under the auspices of the Royal Netherlands Academy of Arts and Sciences, KNAW.

Nowadays, a symposium is not possible without external help and funding; we express our gratitude to the following organizations and institutions for their generous support, financial or otherwise: the Royal Netherlands Academy of Arts and Sciences; University of Amsterdam; Municipality of the City of Amsterdam; Foundation for Fundamental Research of Matter, FOM; Foundation for Mathematics “Mathematical Centre”, SMC; Foundation “Physics”; Centre for Mathematics and Informatics, CWI; Committee “Nonlinear Systems”; Netherlands Organization for Scientific Research; Johan Enschedé BV, Haarlem; IBM Nederland BV, Amsterdam; Kluwer Academic Publishers, Dordrecht; OCE van der Grinten NV, Venlo; PTT Research, Leidschendam; Shell Nederland BV, Rotterdam.

To give PhD students the opportunity to get the optimal profit from the symposium activities, it was considered appropriate to organize during the week preceding the symposium, an introductory course on integrable systems connected with the KdV equation and its relatives. The lectures of this course will be published by the Centre for Mathematics and Informatics in the CWI Syllabus series.

We are indebted to the following organizations who made this course possible by granting financial support: Erasmus Inter University Cooperation Programme, ICP 94; Research School JM Burgers Centre, Delft; Research School MRI, Utrecht; Research School Thomas Stieltjes, Leiden; Dutch Association for Mathematical Physics, FOM/SMC.

Further, it is our duty to acknowledge the secretarial support of Mrs M. I. van der Kooij, University of Twente, who conducted the secretariat of the symposium, Mrs R. Koopmans, Eindhoven University, who assisted the treasurer, and Mrs Ph. Zijlstra, University of Amsterdam, who was engaged with the administration of the PhD course.

Finally, we highly appreciate that these proceedings have been published as a special issue of *Acta Applicandae Mathematica*. It is our pleasure to thank Kluwer Academic Publishers for this, and to thank them for their generous financial support.

E. M. DE JAGER
President Scientific Committee KdV'95