

1983
VOLUME 19
NUMBER 1

INTERNATIONAL JOURNAL OF
SOLIDS and
STRUCTURES

Editor-in-Chief

GEORGE HERRMANN



PERGAMON PRESS

Oxford New York Toronto Paris Frankfurt Sydney

INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES

Editor-in-Chief:

GEORGE HERRMANN *School of Engineering,
Stanford University, Stanford, California 94305*

Associate Editor:

ALICIA GOLEBIEWSKA HERRMANN *School of Engineering, Stanford
University, Stanford, California 94305*

Board of Editors:

J. D. ACHENBACH *Northwestern University*
B. A. BOLEY *Northwestern University*
V. V. BOLOTIN *USSR Academy of Sciences*
L. FINZI *Milan Polytechnic Institute*
Y. C. FUNG *University of California, San Diego*
H. J. GREENBERG *University of Denver*
H. LIEBOWITZ *The George Washington University*
C. MASSONNET *University of Liège*
E. W. PARKES *University Grants Committee, London*
W. ZERNA *Ruhr-Universität Bochum*
O. C. ZIENKIEWICZ *University College of Swansea*
H. ZORSKI *Polish Academy of Sciences*

Editorial Advisory Board:

J. H. ARGYRIS	<i>London</i>	R. D. MINDLIN	<i>New York</i>
L. BEVILACQUA	<i>Brasil</i>	F. NIORDSON	<i>Lyngby</i>
J. L. ERICKSEN	<i>Baltimore</i>	F. K. G. ODQVIST	<i>Stockholm</i>
J. FERRY BORGES	<i>Lisbon</i>	F. DEL POZO	<i>Madrid</i>
N. J. HOFF	<i>Stanford</i>	IU. N. RABOTNOV	<i>Moscow</i>
W. T. KOITER	<i>Delft</i>	F. S. SHAW	<i>Sydney</i>
C. F. KOLLBRUNNER	<i>Zurich</i>	J. SINGER	<i>Haifa</i>
J. MANDEL	<i>Paris</i>	I. N. SNEDDON	<i>Glasgow</i>
M. MIKKOLA	<i>Helsinki</i>	F. ZIEGLER	<i>Wien</i>

Publishing Office: European Publishing Corporation Ltd., 84-86 Malahide Road, Coolock, Dublin 5, Republic of Ireland (Phone Dublin 475377; Telex 25670)

Subscription and Advertising Offices: Headington Hill Hall, Oxford OX3 0BW (Phone Oxford 64881; Telex 83177)

Published monthly. *Annual Subscription Rates* (1983). For libraries, university departments, government laboratories, industrial and other multiple-reader institutions US \$325.00 per annum (including postage and insurance). Two year rate (1983-84) US \$617.50. *Specially reduced rates to individuals.* In the interests of maximizing the dissemination of the research results published in this important international journal we have established a two-tier price structure. Any individual whose institution takes out a library subscription may purchase a second or additional subscription for personal use at the much reduced rate of US \$55.00. Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc, Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A. and for the remainder of the world to: Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Microform Subscriptions and Back Issues

Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Copyright © 1983 Pergamon Press Ltd.

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

U.S. COPYRIGHT LAW APPLICABLE TO USERS IN U.S.A.

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that, in the U.S.A., copies may be made for personal or internal use provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance should be forwarded with a copy of the first page of the article to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, U.S.A. If a code does not appear, copies of the article may be made without charge, provided permission is obtained from the publisher. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works or for resale. Specific written permission must be obtained from the publisher for such copying. In the case of doubt please contact your nearest Pergamon office.

PERGAMON PRESS

Headington Hill Hall, Oxford OX3 0BW, England
Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.