

Contents

Foreword	VII
Preface	IX
1. <i>Constitutive modelling of materials and impact mechanics</i>	
A general approach to rate sensitivity and constitutive modelling of FCC and BCC metals <i>J.R.Klepaczko</i>	3
Constitutive modelling of concrete under impact loading <i>R.John & S.P.Shah</i>	37
Analysis of impact and penetration to geomaterials using engineering models <i>D.Z.Yankelevsky</i>	67
Approaches to penetration problems <i>T.W.Wright & K.Frank</i>	85
Hypervelocity impact phenomenology: Some aspects of debris cloud dynamics <i>C.E.Anderson, Jr. & S.A.Mullin</i>	105
Impact on nonlinear elastic thin-walled tube <i>T.C.T.Ting, Zhijing Tang & Yongchi Li</i>	123
Criticism of the present safety analysis of reactor structures – Proposals for progress in transient loading computation <i>C.Albertini & M.Montagnani</i>	139
2. <i>Computational methods</i>	
Computational methods for impact and penetration <i>T.Belytschko & W.K.Liu</i>	151

Implicit solution of large-scale contact and impact problems employing an EBE preconditioned iterative solver <i>T.J.R.Hughes & R.M.Ferencz</i>	165
Three-dimensional contact/impact methodology <i>R.F.Kulak</i>	183
ALE finite elements for impact, wear and forming simulations <i>W.K.Liu, J.S.Chen, M.Martich, T.Belytschko & A.Huerta</i>	201
Adding an ALE capability to DYNA2D: Experiences and conclusions <i>D.J.Benson</i>	219
Two- and three-dimensional computational approaches for steel projectiles impacting concrete targets <i>G.R.Johnson, R.A.Stryk & M.E.Nixon</i>	233
The development of a finite element model for impact damage of a composite cylinder using a mixed variational principle <i>W.E.Bachrach</i>	251
Axisymmetric response of finitely deforming elastic membranes <i>L.T.Wheeler, L.A.Graux & T.E.Tezduyar</i>	273
 <i>3. Case studies and experimental verifications</i>	
Round robin benchmark tests of impact transient calculations of shipping cask vessels <i>T.Aizawa, H.Ohtubo, G.Yagawa, H.Takeda & Y.Toi</i>	287
Response of metal tanks to impulsive spot loading: Experiments and calculations <i>B.S.Holmes, S.W.Kirkpatrick & L.E.Schwer</i>	317
Modelling of reinforced concrete containments during external impact <i>J.M.Goicolea, J.Marti, I.Attalla & C.Gratieux</i>	333
Gap and impact problems in LMR piping systems and reactor components <i>D.C.Ma, J.Gvildys & Y.W.Chang</i>	343
Medium and low speed impact calculations using the PISCES codes <i>A.Van der Heijden, H.Van de Graaf, K.Thung & W.Bruijs</i>	365
Numerical and experimental impact tests on metallic plates <i>P.Andreuccetti, D.Aquaro & G.Forasassi</i>	375
Authors' index	385