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Chapter 12. On the buckling mechanisms of large-scale shell structures made of high-strength concrete; Chapter 13. Nonlinear seismic response of a soil deposit using the Volterra series; Chapter 14. Membranes and rods from lattice films and chains: modeling and computations; Chapter 15. Multiscale modelling of crush behaviour of closed-cell aluminium foam; Chapter 16. A new hybrid formulation for laminated composite materials analysis; Chapter 17. Higher order terms for a crack terminating at the interface between mismatched solids; Chapter 18. Calculation of stress intensity factors for bimaterial notches - thermal stresses; Chapter 19. Phenomenological modelling of structural embrittlement in perforated plates; Chapter 20. Analysis of a partially closed oblique edge crack under surface travelling load; Chapter 21. Behaviour of small fatigue cracks emanating from notches in Ti-6Al-4V; Chapter 22. Bounding surface plasticity for cyclic loaded sand and its implementation; Chapter 23. Large strain time- and temperature-dependent modeling of PTFE; Chapter 24. Two-dimensional numerical simulations of magnetic domains in ferromagnetic microstructures; Chapter 25. An impedance-based piezoelectric-structure interaction model for smart structure applications; Chapter 26. Development of a crashworthy subfloor concept for a commuter aircraft; Chapter 27. A microplane model for plane-stress masonry structures; Chapter 28. External forcing terms in energy-conserving based time integration algorithms; Chapter 29. Quasi-steady analysis of a two-dimensional bridge deck element; Chapter 30. An index reduction method in holonomic system dynamics; Chapter 31. Multiscale numerical simulation of rock slope instabilities

Sommario/riassunto

Bringing together the world's leading researchers and practitioners of computational mechanics, these new volumes meet and build on the eight key challenges for research and development in computational mechanics. Researchers have recently identified eight critical research tasks facing the field of computational mechanics. These tasks have come about because it appears possible to reach a new level of mathematical modelling and numerical solution that will lead to a much deeper understanding of nature and to great improvements in engineering design. The eight tasks
