

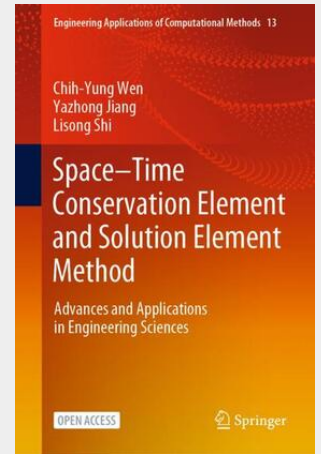
Wen / Shi / Jiang

Space-Time Conservation Element and Solution Element Method

Advances and Applications in Engineering Sciences

This open access book introduces the fundamentals of the space-time conservation element and solution element (CESE) method, which is a novel numerical approach for solving equations of physical conservation laws. It highlights the recent progress to establish various improved CESE schemes and its engineering applications. With attractive accuracy, efficiency, and robustness, the CESE method is particularly suitable for solving time-dependent nonlinear hyperbolic systems involving dynamical evolutions of waves and discontinuities. Therefore, it has been applied to a wide spectrum of problems, e.g., aerodynamics, aeroacoustics, magnetohydrodynamics, multi-material flows, and detonations. This book contains algorithm analysis, numerical examples, as well as demonstration codes. This book is intended for graduate students and researchers who are interested in the fields such as computational fluid dynamics (CFD), mechanical engineering, and numerical computation.

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