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**Engineering : Solid Mechanics**

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# Smoothed Particle Hydrodynamics

**Fundamentals and Basic Applications in Continuum Mechanics**

- Debates the use of concepts of molecular dynamics in the continuum domain
- Questions the application of molecular scale concepts in the continuum macroscopic scale, mainly in the implementation of boundary treatment techniques in the SPH particle method
- Offers new solutions to open problems in the literature

This book is based on results obtained over a decade of study and research. It questions the use of dynamic molecular models in the continuum scale providing alternative solutions to open problems in the literature. It provides a physical-mathematical understanding of the differential equations that govern fluid flow and energy transport, serving as a reference to the application of Smoothed Particle Hydrodynamics in continuum fluid mechanics and transport phenomena. The physical-mathematical modelling of the problems in the continuum scale and the employment of the SPH method for solving the equations are presented. Examples of applications in continuum fluid mechanics with numerical results and discussions are also provided. This literature defends the concepts of continuum mechanics and the application of boundary treatment techniques that do not violate the laws of physics.

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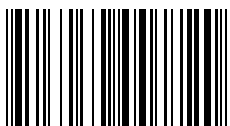
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