

# Smoothed particle hydrodynamics: fundamentals and basic applications in continuum mechanics

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## Abstrak

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. This book presents the physical-mathematical modelling of the SPH method and provides examples of applications in continuum mechanics with numerical results and discussions. It defends concepts of continuum mechanics and the application of boundary treatment techniques that do not violate the laws of physics.