

Sethian, J. A.

Level set methods and fast marching methods. Evolving interfaces in computational geometry, fluid mechanics, computer vision, and materials science. (English) [Zbl 0973.76003](#)
[Cambridge Monographs on Applied and Computational Mathematics](#). 3. Cambridge: Cambridge University Press. xx, 378 p. (1999).

Publisher's description: This new edition of Professor Sethian's successful text provides an introduction to level set methods and fast marching methods, which are powerful numerical techniques for analyzing and computing interface motion in a host of settings. They rely on a fundamental shift in how one views moving boundaries; rethinking the natural geometric Lagrangian perspective, and exchanging it for an Eulerian initial value partial differential equation perspective. For this edition, the collection of applications provided in the text has been expanded, including examples from physics, chemistry, fluid mechanics, combustion, image processing, material science, fabrication of microelectronic components, computer vision, computer-aided design, and optimal control theory. This book will be a useful resource for mathematicians, applied scientists, practising engineers, computer graphic artists, and anyone interested in the evolution of boundaries and interfaces.

MSC:

- 76-02 Research exposition (monographs, survey articles) pertaining to fluid mechanics
- 76M25 Other numerical methods (fluid mechanics) (MSC2010)
- 68U05 Computer graphics; computational geometry (digital and algorithmic aspects)

Cited in **2** Reviews
Cited in **544** Documents

Keywords:

level set methods; fast marching methods; image processing; computer-aided design; evolution of interfaces

Software:

Octave