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An efficient iterative thresholding method for image segmentation

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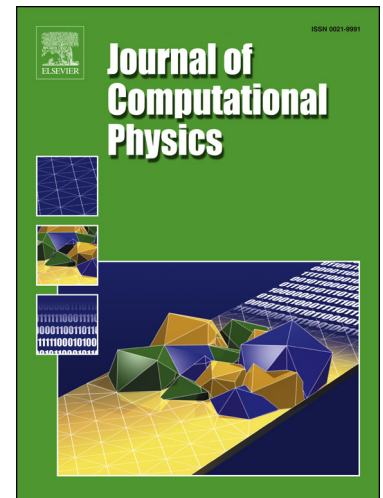
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Highlights

- We propose a new method for minimizing piecewise constant Mumford-Shah functional.
- The contour length (or perimeter) is approximated by a non-local multi-phase energy.
- The minimization problem is solved by an iterative thresholding method.
- The algorithm has the optimal complexity $O(N \log N)$ per iteration and fast convergence.
- We prove rigorously the monotone decay of the iterative algorithm.

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