



UNIVERSITA' DEGLI STUDI DI MILANO  
FACOLTA' DI SCIENZE MATEMATICHE  
FISICHE E NATURALI

GRADUATE SCHOOL IN MATHEMATICAL SCIENCES  
PHD PROGRAM IN MATHEMATICS AND STATISTICS  
FOR COMPUTATIONAL SCIENCES

Non-overlapping domain  
decomposition methods  
for three-dimensional cardiac  
reaction-diffusion  
models and applications

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Ledizioni

Recent advances in biotechnology and the availability of ever more powerful computers have led to the formulation of increasingly complex models at all levels of life sciences, in particular of cardiac electrophysiology. Multiscale modeling of the bioelectric activity of the heart, taking into account macroscopic (fiber architecture and anisotropy) and microscopic (cellular) features of the tissue, aim to develop predictive tools for future drug design and patient-specific therapies, using detailed and efficient three-dimensional solvers for the governing equations of tissue electrophysiology.