

Cloud Computing for Stochastic Simulations in Bioelectromagnetics

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Abstract

The human body is extremely complex structure. The nature of the material parameters, and its shapes are widely varying. Classical deterministic approach, popular in the technical simulations, is ignoring this fact. We are going to present methodology for stochastic models of tissues, and computer solver system capable to deal with new kind of models.

The random variables arithmetic is used to build a model for the material parameters of the tissues. Probability density functions (PDF) of conductivity are calculated by merging different measurement collected from the wide literature review.

Classic Monte Carlo approach is used to solve the problem. It is characterized by preserving full statistical properties of the input parameters to the results. The method has high computational costs, but has also advantage of being relatively easy to parallelize using cloud computing architecture.

References

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