

## Estimation of Specific Absorption Rate with Kriging Method

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The development of wireless technologies sets off new issues regarding exposure of the people to electromagnetic radiation. The non-ionizing dosimetry is focused on the calculation of the dose that can be absorbed by users of a wireless technology. The integration of the variability in the dosimetry is a major issue, especially the one led by the environment. Electromagnetic environment are described by wireless channel model. The model indicates that the exposure of people is random; the channel parameters follow known probability distributions. This model shows that the electromagnetic waves do not arrive separately but in cluster form. The angles of incidence and amplitudes of the electromagnetic waves follow specific probability distribution. In the framework of the study of people's exposure to complex environment, it is necessary to expose an anatomical body model to all possible angle of incidence. The computation time in dosimetry is especially long so it is essential to pitch for an efficient estimation method in order to obtain the SAR values for all possible angle of incidence.

In this study, we look into estimation of SAR in function of azimuthal angle of arrival of the electromagnetic wave. Kriging method which proves its efficiency in many domains will be used to respond to this problem. The kriging method is a stochastic spatial interpolation method which estimates a value of a phenomenon at locations where no calculation or measure has been done and also estimation variance (called kriging variance).

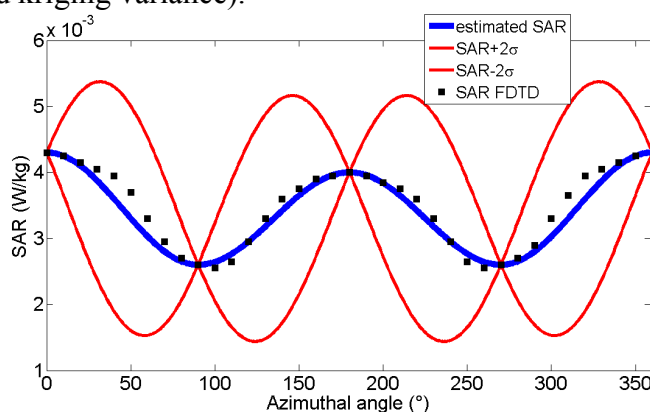


Figure 1: SAR estimation with its confidence intervals using 4 values from FDTD calculation

In the full paper an estimation method of whole body SAR based on kriging approach will be presented in order to decrease the number of FDTD calculation. In the full detailed results will be presented, showing the impact of the number of SAR values taken in kriging estimation.