Development of a matlab software for real-time mapping of electric fields on transmission power line

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The main contribution of this article is the mapping of the electric fields in transmission power lines using the Charge Simulation Method (CSM), combined with an embedded system. In this research, a computational routine was written in MATLAB®. The electric field intensity is calculated at a 1 meter height on right-of-way and between towers. The mapping is performed for a space between towers and considers that the maximum arrow of the conductors occurs in the middle of this distance, what provides a computational result where the profile of the electric field can be analyzed. The bundle conductor height varies along the distance between towers in order to improve the values of the calculated field. The results can be seen in different graphics (three-dimensional, bi-dimensional, a slice of the field and others). Charge Simulation Method is a power tool for calculating intensity field of high voltage systems, so this is a motivation for the use of the method. A series of detectors are used to obtain the data of the voltage that is provided to the load. These data are captured by a microcontroller and transmitted to the operational center. Using this data, the measure of the field is possible.