

Electromagnetic Source Direction of Arrival Estimation via Virtual Antenna Array

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Abstract : Nowadays, due to diverse electric products and complex electromagnetic environment, the localization and troubleshooting of the electromagnetic radiation source is urgent and necessary especially on the condition of far field. However, based on the existing DOA positioning method, the system or devices are complex, bulky and expensive. To address this issue, this paper proposes a single antenna radiation source localization method. A single antenna moves to form a virtual antenna array combined with DOA and MUSIC algorithm to position accurately, meanwhile reducing the cost and simplify the equipment. As shown in the results of simulations and experiments, the virtual antenna array DOA estimation modeling is correct and its positioning is credible.

Keywords : virtual antenna array, DOA, localization, far field

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