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Mapping method and apparatus

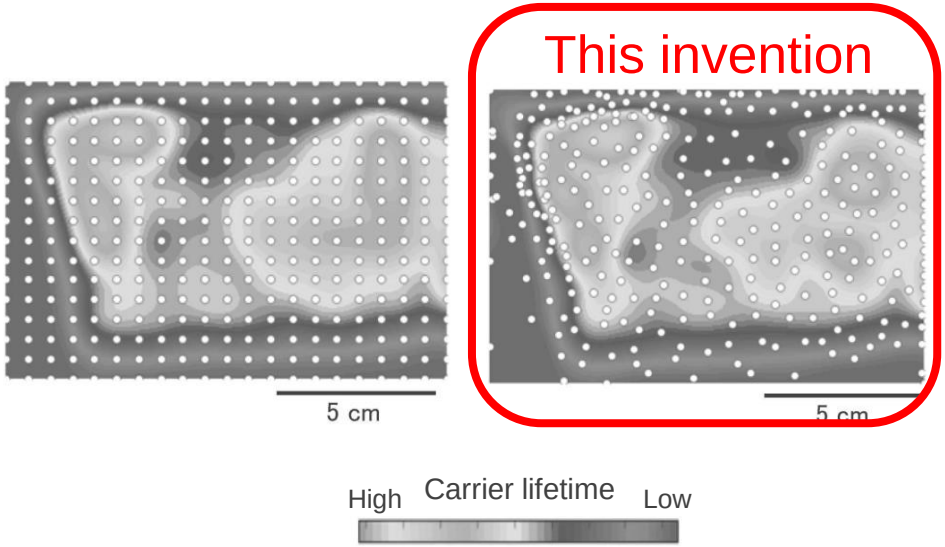
Possible to reproduce the physical quantity distribution with high accuracy

Overview

Mapping measurement to determine the distribution of various physical quantities is used anywhere in modern society, from microscopic to global scale. The fewer the number of measurement points, the lower the accuracy of the physical quantity distribution is obtained during mapping, so there is a method to estimate and interpolate physical quantity between data points. However, it is extremely difficult to implement an appropriate interpolated value, so the accuracy of the resulting physical quantity distribution has a limit. In addition, grid measurement points are not always optimal, so the accuracy improvement is required even after physical quantity interpolation.

This invention is able to provide a method and apparatus for efficient mapping by using measurement point coordinate suitable for physical quantity distribution in parameter space, which was lacking in conventional mapping measurement with equidistant interval or in mapping technique that can only be used for a specific application. This invention uses the data obtained during the mapping to sequentially determine the next coordinate to measure. It can also be applied to object with unknown distribution that is measured for the first time, making it more useful than conventional mapping method.

Reproduce the original distribution with higher accuracy than conventional equidistant mapping



Product Application

- Mapping measurement of physical quantity (temperature, humidity, frequency, amplitude, permittivity, etc.)
- Mapping of any physical quantity in parameter space along axis (reciprocal lattice space axis, energy axis, etc.)

Related Works

[1] Koji Shimoyama and Soshi Kawai, “A Kriging-Based Dynamic Adaptive Sampling Method for Uncertainty Quantification,” Transactions of the Japan Society for Aeronautical and Space Sciences, Vol. 62, Issue 3, May 2019, pp. 137–150.

IP Data

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