

PEAK ANALYZING METHOD AND WAVEFORM PROCESSING DEVICE

ABSTRACT

5 One mode of the peak analyzing method according to the present invention is a peak
analyzing method using a computer to process three-dimensional data obtained by acquiring
a series of first signal waveforms representing a relationship between a first parameter and a
signal intensity for a given set of changing second parameters, and to separate overlapping
peaks observed in a second signal waveform representing a relationship between the second
10 parameter and the signal intensity into a plurality of individual peaks originating from
different factors based on signal patterns observed in a dimension of the first parameter, the
method executing: a singular value decomposition step configured to perform singular value
decomposition on an input matrix expressing three-dimensional data to be processed, and to
determine a first matrix representing a plurality of basis vectors related to the first parameter
15 and a second matrix representing a plurality of weighting vectors related to the second
parameter, where the first matrix and the second matrix have a lowered rank than the input
matrix based on singular values obtained by the singular value decomposition; a
transformation matrix acquisition step configured to estimate characteristic orientations
within a space spanned by the plurality of basis vectors by performing a geometric analysis
20 on a trajectory defined by the plurality of weighting vectors in an SVD projection space
whose number of dimensions is equal to the lowered rank given by a singular value
decomposition process, and to determine a transformation matrix containing relevant
information of the characteristic orientations; and a peak separation step configured to
deconvolute signal waveforms in the first matrix of the dimension of the first parameter by
25 the transformation matrix, and to separate peaks in the second signal waveform in the second

matrix by the transformation matrix.

[Fig. 2]