

# DTI Application

## APPLICATION

The DTI Application is an optional application for Canon Medical Systems magnetic resonance imaging (MRI) systems. This application provides new pulse sequences for DTI and new functions for imaging and post-processing in order to expand the functions of mNeuro Package.

## APPLICABLE COMBINATIONS

System	Software version
Vantage Galan 3T	V4.0 or later
Vantage Titan 3T	V1.35 or later
Vantage Orian	V4.5 or later
Vantage Fortian	V8.0 or later
Vantage Titan	V1.37 or later
Vantage Elan	V3.0 or later
EXCELART Vantage Atlas	V1.36

The optional mNeuro Package must be installed in the MRI system.

## COMPOSITION

Software (License) .....1 set

This application does not include an operation manual.  
Refer to the operation manual supplied with the MRI system.

## PERFORMANCE SPECIFICATIONS

This application provides the following functions.

### Diffusion Tensor Imaging (DTI)

DTI technique visualizes diffusion anisotropy.

At least seven sets of diffusion-weighted images, one acquired without an MPG pulse and at least six acquired with MPG pulses applied isotropically in different directions, are acquired.

Based on these acquired images representing the amount of diffusion in each direction, the degree of anisotropy and the sum of diffusion factors can be calculated.

The diffusion tensor is assumed to be an ellipsoid (diffusion ellipsoid) and is defined by a symmetric  $3 \times 3$  matrix. The characteristic values Lambda 1, Lambda 2, and Lambda 3 of the diffusion tensor (Lambda 1 > Lambda 2 > Lambda 3) are calculated by performing matrix diagonalization for each pixel.

#### • Post-Processing for Diffusion Tensor

For V1.37 or before

##### – FA (fractional anisotropy) image

The diffusion FA image shows the degree of diffusion anisotropy. This image can be generated automatically after image acquisition.

##### – Lambda 1, Lambda 2, Lambda 3 images (characteristic value images)

These images are generated by converting the characteristic values obtained from the diffusion tensor into an image.

For V2.10 or later

The following types of diffusion maps can be processed.

The software is based on parts of analysis used in JHU's image analysis software "DtiStudio". (Isotropic DWI, Isotropic ADC, FA, RA, VR, Color Map 1/2/3, Lambda 1/2/3, Trace)

INSTALLATION CONDITIONS

The power and environmental conditions are the same as for the MRI system.

COMPLIANCE WITH STANDARDS

This application complies with the same standards as the MRI system.

MASS

Unit	Mass (kg)
DTI Application	Approx. 0.5

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