DICOM Tractography Converter

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Learning Objectives

The aim is to convert between DICOM TrackSet and Slicer-style VTK tractography.

Following this tutorial, you'll be able to:

1) Save DICOM format tractography files in 3D Slicer
2) Load DICOM format tractography files into 3D Slicer
3) Convert between VTK format tractography files and DICOM format using command line

For more information about Tractography Supplement DICOM standard, please visit this website: http://www.dclunie.com

3D Slicer

The tutorial uses the 3D Slicer (Version 4.7.0 Nightly Build) software available at:

http://download.slicer.org

Disclaimer:
It is the responsibility of the user of 3DSlicer to comply with both the terms of the license and with the applicable laws, regulations and rules. Slicer is a tool for research, and is not FDA approved.

Slicer dMRI

An open-source project to improve and extend diffusion magnetic resonance imaging software in 3D Slicer:

http://dmri.slicer.org

Please visit the following website to install Slicer dMRI:
http://dmri.slicer.org/download/

Tutorial Data

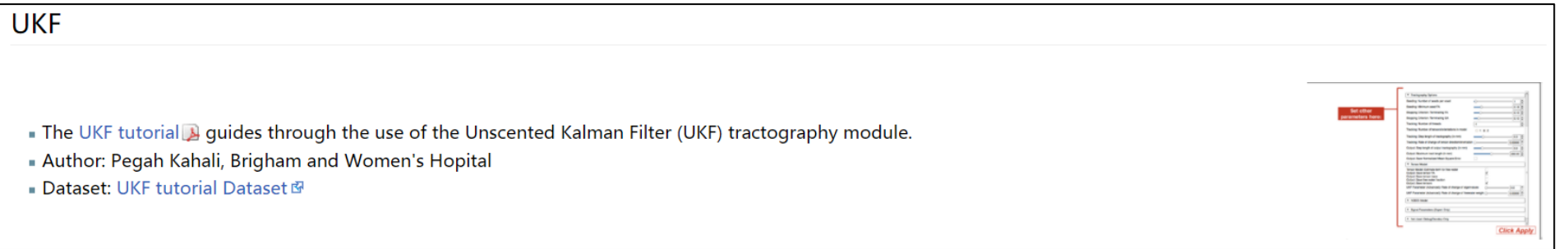
Download sample data, at:
https://www.na-mic.org/Wiki/images/f/fc/Example_data.zip

The following data are provided:

- DICOM image
- Whole brain tractography (conducted using UKF tractography from the same data) in VTK format.

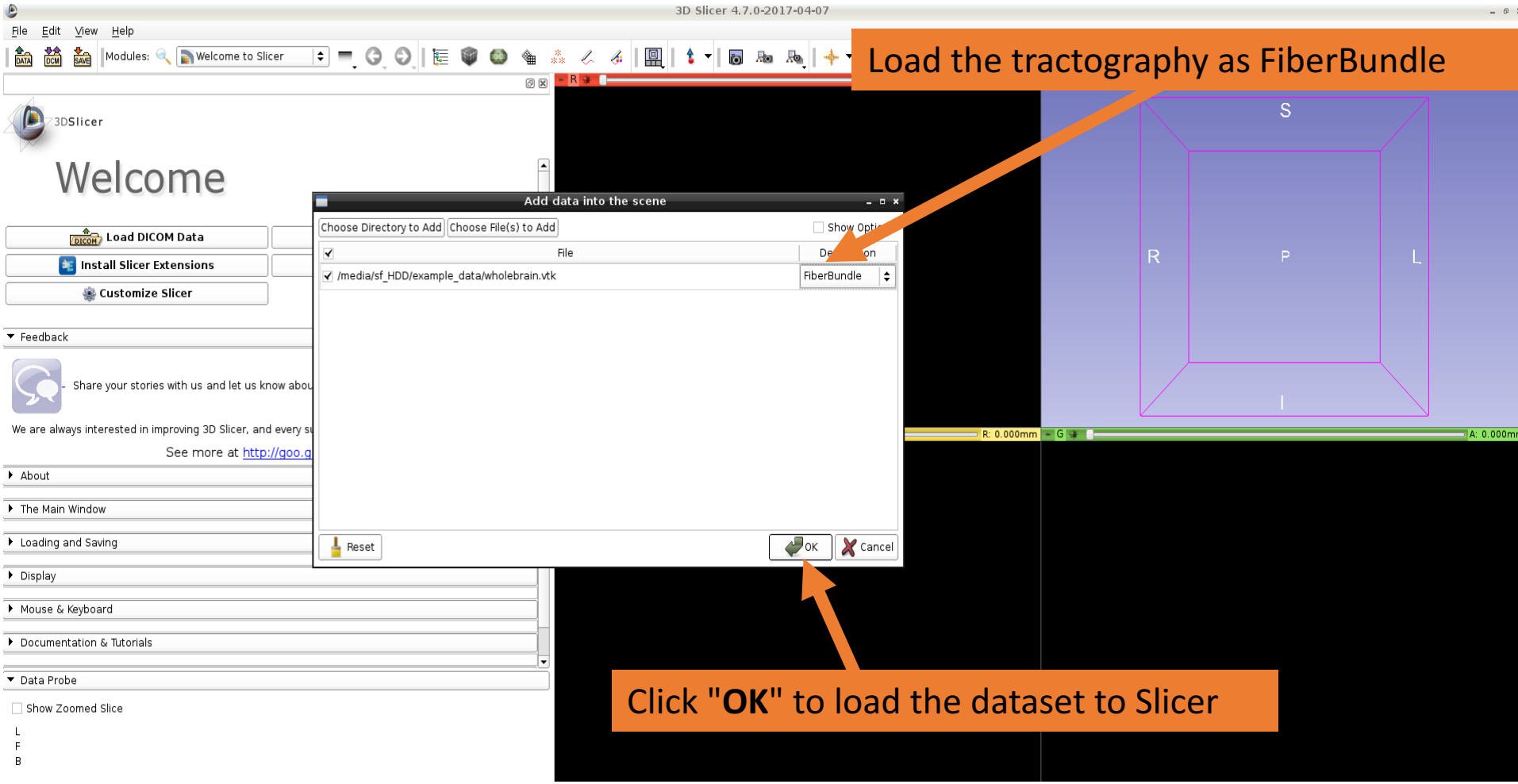
NOTE: *Both use cases require a reference diffusion-weighted MRI DICOM scan. The reference scan must be the DICOM data from which the tractography was created.*

For more information about UKF tractography, please follow this tutorial:
https://dmri.slicer.org/docs/tutorials/UKFTractography.pdf



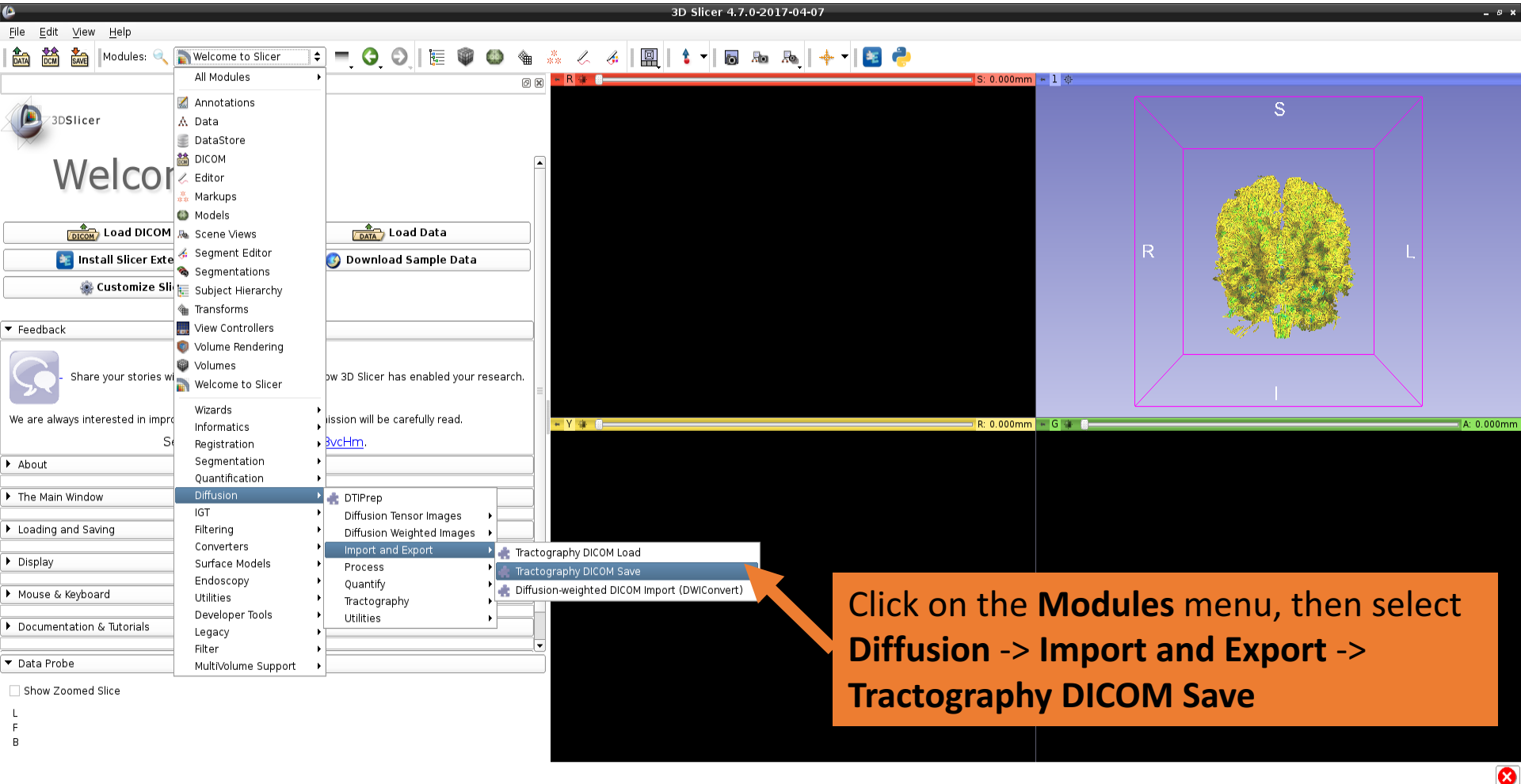
Tractography DICOM Save

Load VTK file



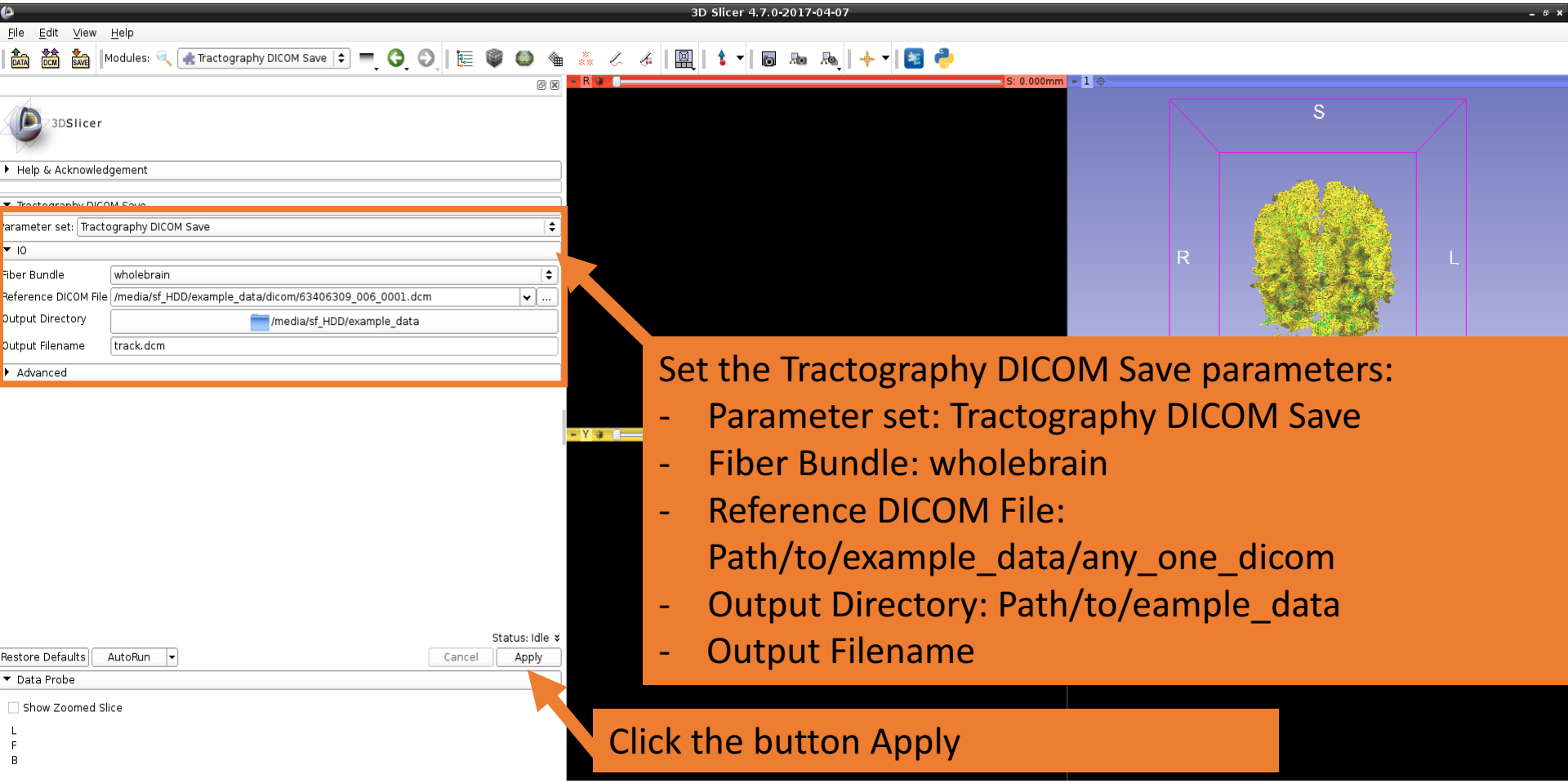
Tractography DICOM Save

Select the module



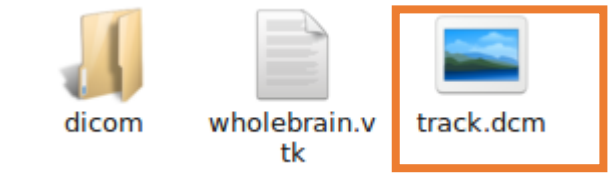
Tractography DICOM Save

Set parameters



Tractography DICOM Save

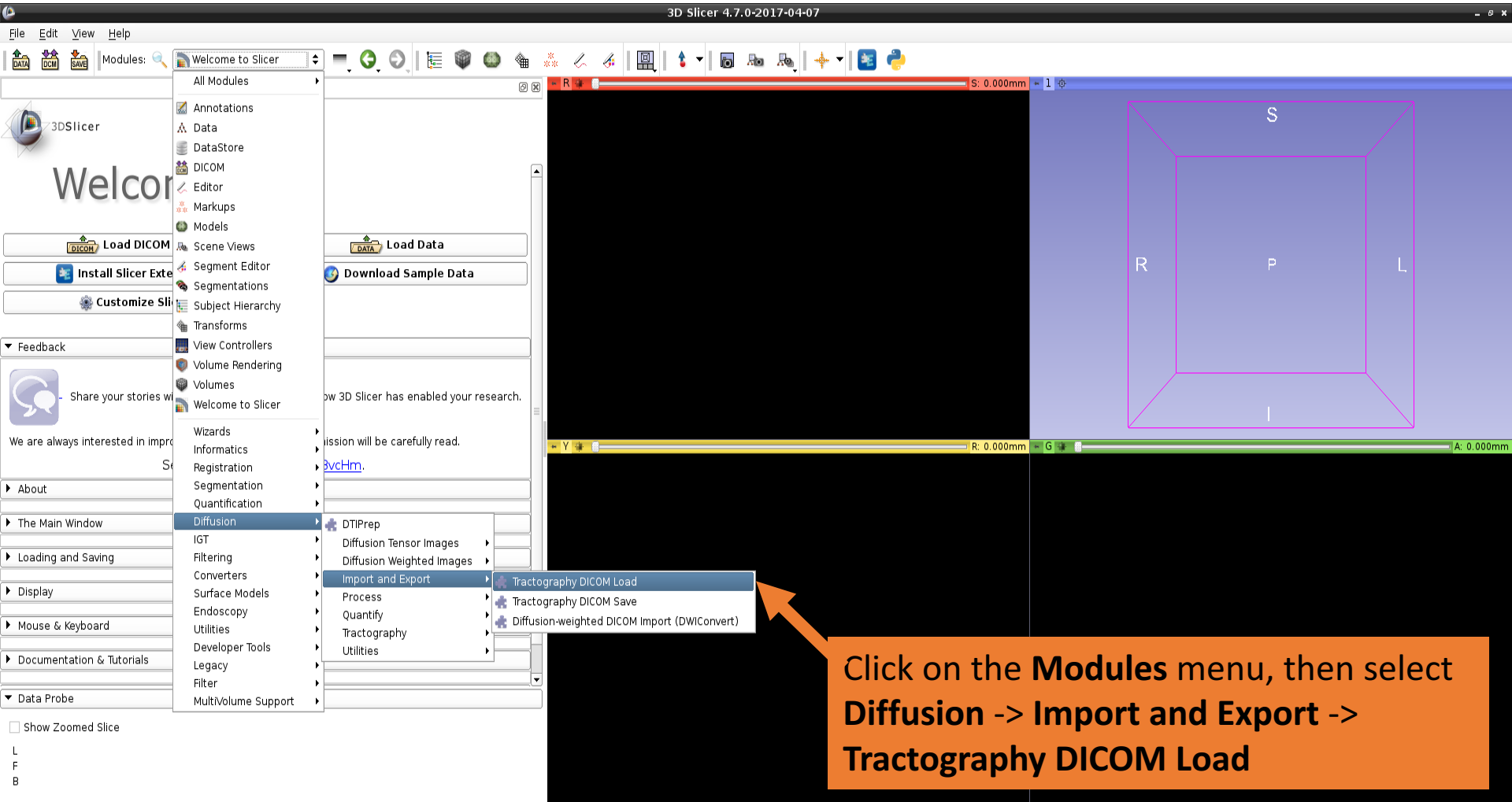
Output



Output the DICOM TrackSet file.

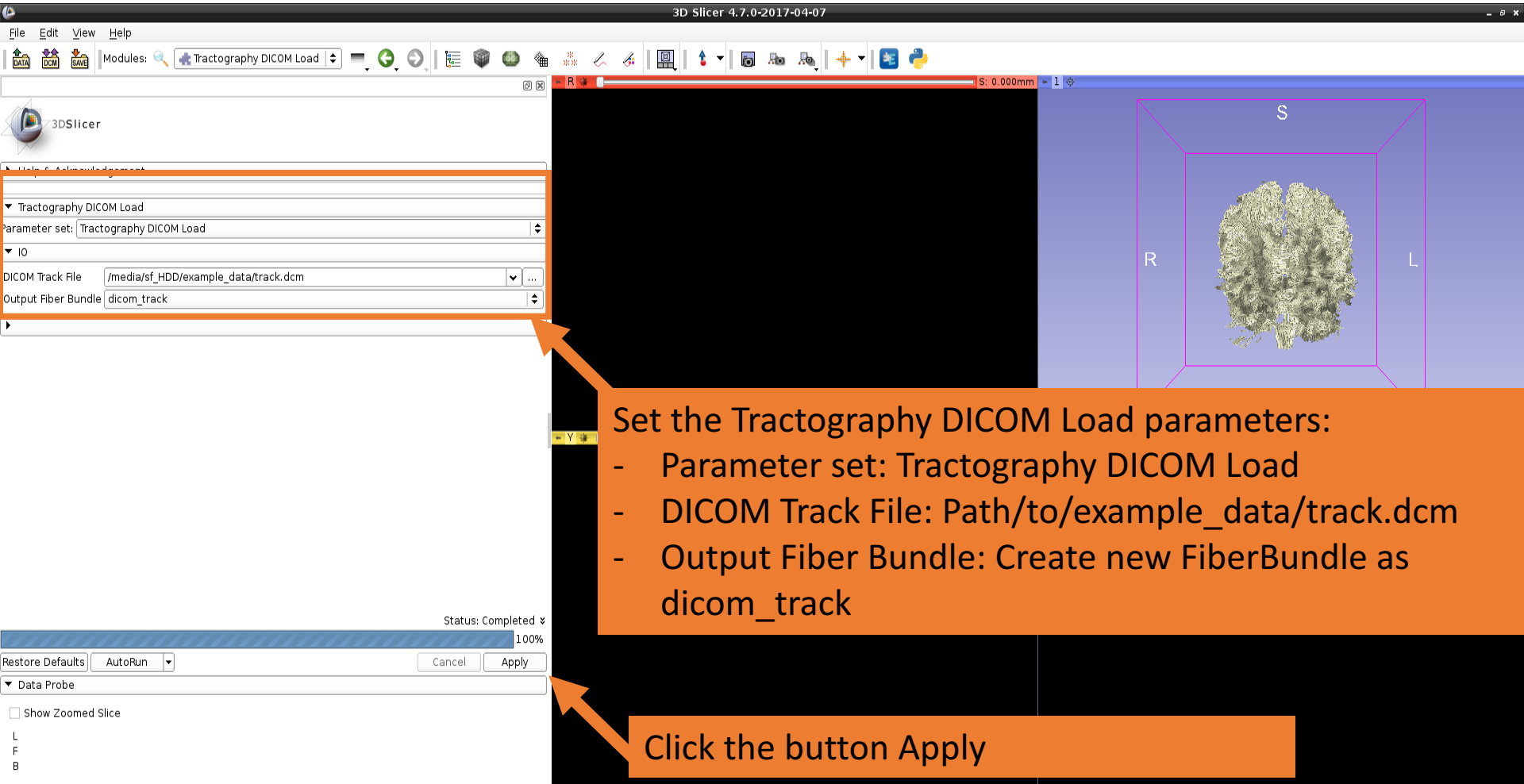
Tractography DICOM Load

Select the module



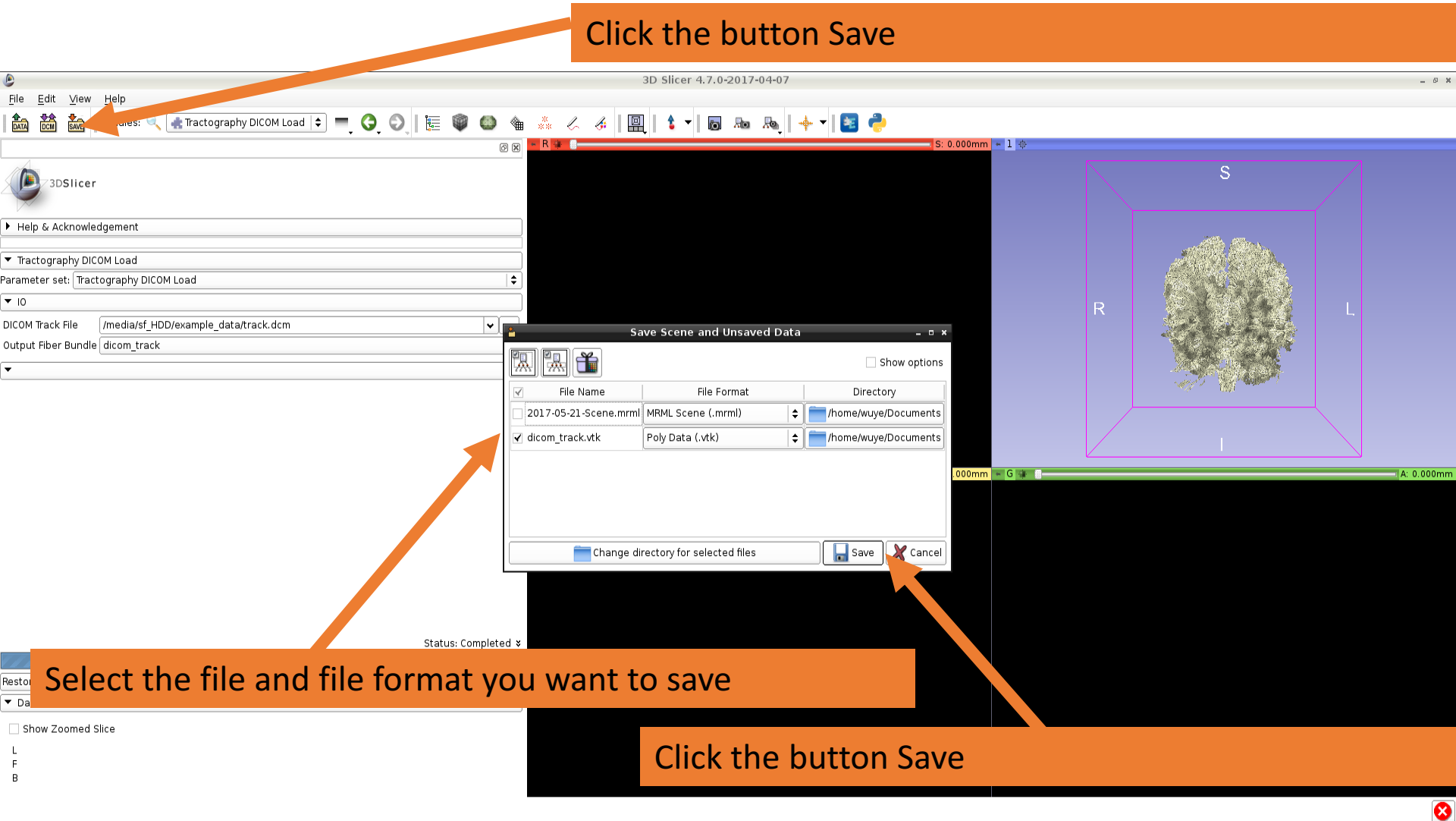
Tractography DICOM Load

Set parameters



Tractography DICOM Load

Save tractography as VTK



Command Line Interface (CLI)

Convert between DICOM TrackSet and Slicer-style VTK tractography in CLI mode.

Command for Tractography DICOM Save:

```
Slicer=/home/wuye/usr/Slicer-4.7.0-2017-04-07-linux-amd64/Slicer
Path=/media/sf_HDD/example_data

# Help information
$Slicer --launch VTK_to_DICOMTract -h

# Step: Tractography DIDOM Save=
$Slicer --launch VTK_to_DICOMTract --vtk_fiberbundle $Path/wholebrain.vtk --reference_dicom $Path/dicom/63406309_006_0001.dcm --output_dicom $Path/ --output_filename track.dcm
```

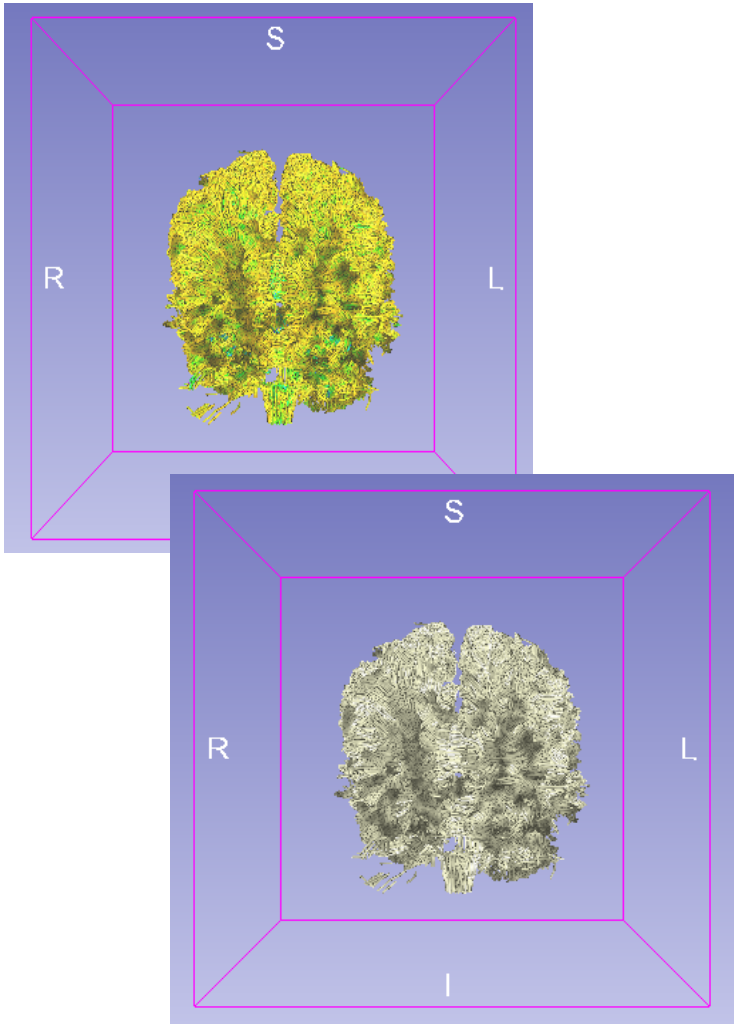
Command for Tractography DICOM Load:

```
Slicer=/home/wuye/usr/Slicer-4.7.0-2017-04-07-linux-amd64/Slicer
Path=/media/sf_HDD/example_data

# Help information
$Slicer --launch DICOMTract_to_VTK -h

# Step: Tractography DICOM Load
$Slicer --launch DICOMTract_to_VTK --input_track_dicom $Path/track.dcm --output_vtk $Path/dicom_track.vtk
```

Conclusion



This tutorial guided you to convert between DICOM TrackSet and Slicer-style VTK tractography.

Support: https://discourse.slicer.org

Acknowledgments

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