

## pCT\_TOOLS DOCUMENTATION:

THE FOLLOWING DOCUMENTATION DESCRIBES EACH BASH FUNCTION/SCRIPT AND OUTLINES THEIR OPTIONS AND USAGE.

### BASH SCRIPTS:

DESCRIPTION OF BASH SCRIPTS SUPPLIED IN pCT\_TOOLS REPOSITORY AND THEIR USAGE

#### .bash\_profile

**Description:** – Generic bash profile pCT users can use for shell sessions on Kodiak/Tardis. This sources the load\_pct\_functions.sh script and loads its bash functions, variables, and aliases/shortcuts so (1) these can be used to perform the host dependent and session setup tasks during user login and (2) they are made available to the pCT user during their shell session

#### load\_pct\_functions.sh

**Description:** – Loads the bash functions, variables, and aliases/shortcuts useful to pCT users on Kodiak/Tardis. This is then sourced by the .bash\_profile (provided separately) so (1) these can be used to perform the host dependent and session setup tasks during user login and (2) they are made available to the pCT user during their shell session

#### link\_raw\_data.sh

**USAGE:** `USAGE: [-h][-p <data path>][-i <angle interval>]`

**Description:** – Generates soft data links to raw data files (/ion/pCT\_data/raw\_data/<run\_date>) for a particular run date and organizes these in the /ion/pCT\_data/organized\_data directory by phantom name according to the standardized naming/organizational scheme

#### Options:

#### Option Details:

**-h**

print help to terminal

**-p**

path to source raw data (DEFAULT: current working directory)

**-i**

set angle interval [°] between data files (DEFAULT: 4 [°])

## link\_projection\_data.sh

**USAGE:** [-h][-EGT][-g][-p <data path>][-i <angle interval>]

**Description:** – Generates soft data links to preprocessed data files (/ion/pCT\_data/preprocessed\_data/<run\_date>) for a particular run date and organizes these in the /ion/pCT\_data/organized\_data directory by phantom name according to the standardized naming/organizational scheme

### Options:

### Option Details:

- h** print help to terminal
- p** path to source preprocessed data (DEFAULT: current working directory)
- i** set angle interval [°] between data files (DEFAULT: 4 [°])
- E** Experimental data flag (DEFAULT)
- G** GEANT4 data flag
- T** TOPAS data flag

## stage\_preprocessed\_data.sh

**USAGE:** [-h][-v][-O][-p <readme/data path>] [-f <readme.txt filename>]

**Description:** – Used to stage preprocessed data with naming/organization appropriate for immediate sharing by specifying location of preprocessed\_data and corresponding readme.txt file from which the phantom name, run #/tag(s), and projection angle can be parsed

### Options:

### Option Details:

- h** print help to terminal
- v** verbose flag: terminal output 'on' (DEFAULT: \$verbose\_flag)
- d** date of preprocessing (DEFAULT: \$preprocessed\_date (today))
- p** path to data and readme.txt text file (DEFAULT: \$preprocessed\_path)
- f** filename of readme.txt text file (DEFAULT: \$filename)
- O** specifies old date format MMDDYYYY is used (DEFAULT: 'YY-MM-DD' format)

### rename-files.sh

USAGE: [-h][\$1 <angle interval>]

**Description:** – Rename preprocessed data files in current folder, changing each file with .dat.root.reco.root.bin extension to projection.xxx.bin for each angle xxx

#### Options:

#### Option Details:

-h

print help to terminal

-i

angle interval between preprocessed data files (DEFAULT: 4 [°])

## BASH FUNCTIONS:

DESCRIPTION OF BASH FUNCTIONS SUPPLIED IN PCT\_TOOLS REPOSITORY AND THEIR USAGE

### add\_rcode\_repo

USAGE: [-h][-u <username>][-a <git account>][-r <git repo>]

**Description:** – add GitHub repository to a user's code directory on Tardis

#### Options:

#### Option Details:

-h

print help to terminal

-u

username (DEFAULT: \$username)

-a

git account (DEFAULT: \$account)

-r

git repository (DEFAULT: \$repo)

## set\_rcode

**USAGE:** [-h][-G][-g][-a <git account>][-r <git repo>][-b <git branch>] [-u <username>]

**Description:** – add GitHub repository to a user's code directory on Tardis

### Options:

### Option Details:

- h** print help to terminal
- a** git account (DEFAULT: \$account)
- r** git repository (DEFAULT: \$repo)
- b** git branch (DEFAULT: \$branch)
- u** username, if applicable (DEFAULT: \$username)
- G** reconstruction group username flag (DEFAULT: \$username)
- g** global git code repositories flag (DEFAULT: user git code directories)

## nvccgen

**USAGE:** [-h][\$1][\$2]

**Description:** – compile pCT\_Reconstruction code with argument #1/#2 used to set architecture/code

### Options:

### Option Details:

- h** print help to terminal
- \$1** NVCC architecture specification # (35 used in compute\_35)
- \$2** NVCC code specification # (i.e. 35 used in sm\_35)

## runrecon

**USAGE:** [-h][\$1][\$2]

**Description:** – compile and run pCT\_Reconstruction code with argument #1/#2 used to set architecture/code

### Options:

### Option Details:

- h** print help to terminal
- \$1** NVCC architecture specification # (35 used in compute\_35)
- \$2** NVCC code specification # (i.e. 35 used in sm\_35)

## construct\_recon\_path

**USAGE:** [-h][-EGT][-IO][-o <object name>] [-r <run date>][-n <run # + tag(s)>] [-d <preprocessed date>][-D <reconstruction date>]

**Description:** – construct input or output data path for appropriately organized reconstruction data

### Options:

### Option Details:

<b>-h</b>	print help to terminal
<b>-o</b>	object name (REQUIRED)
<b>-r</b>	run date (REQUIRED)
<b>-n</b>	run # + tag(s) (REQUIRED)
<b>-d</b>	preprocessed date (DEFAULT: today)
<b>-D</b>	reconstruction date, if applicable (DEFAULT: today)
<b>-E</b>	Experimental data flag (DEFAULT)
<b>-G</b>	GEANT4 data flag
<b>-T</b>	TOPAS data flag
<b>-I</b>	input data flag
<b>-O</b>	output data flag

## construct\_preprocessing\_path

**USAGE:** [-h][-EGT][-IO][-o <object name>] [-r <run date>][-n <run # + tag(s)>] [-d <preprocessed date>]

**Description:** – construct input or output data path for appropriately organized preprocessed data

### Options:

### Option Details:

<b>-h</b>	print help to terminal
<b>-o</b>	object name (REQUIRED)
<b>-r</b>	run date (REQUIRED)
<b>-n</b>	run # + tag(s) (REQUIRED)
<b>-d</b>	preprocessed date (DEFAULT: today)
<b>-E</b>	Experimental data flag (DEFAULT)
<b>-G</b>	GEANT4 data flag
<b>-T</b>	TOPAS data flag
<b>-I</b>	input data flag
<b>-O</b>	output data flag

## stage\_preprocessed\_data.sh

**USAGE:** [-h][-v][-O][-p <readme/data path>] [-f <readme.txt filename>]

**Description:** – Used to stage preprocessed data with naming/organization appropriate for immediate sharing by specifying location of preprocessed\_data and corresponding readme.txt file from which the phantom name, run #/tag(s), and projection angle can be parsed

### Options:

### Option Details:

<b>-h</b>	print help to terminal
<b>-v</b>	verbose flag: terminal output 'on' (DEFAULT: \$verbose_flag)
<b>-d</b>	date of preprocessing (DEFAULT: \$preprocessed_date (today))
<b>-p</b>	path to data and readme.txt text file (DEFAULT: \$preprocessed_path)
<b>-f</b>	filename of readme.txt text file (DEFAULT: \$filename)
<b>-O</b>	specifies old date format MMDDYYYY is used (DEFAULT: 'YY-MM-DD' format)