## User manual for REPA program (REsidual Plotting and Ambiguity resolution)

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*Abstract:*

*This document describes how to use program REPA, the graphics tool for visualization of observables, residuals, manual ambiguity resolution and toggle observation suppression status.*

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## 1   Scenario 1: Look at residuals

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines exceeds
25, then REPA will show only one page. There are two ways of looking at
residuals: a) look at small plots; b) look at big plots. All baselines
are sorted in alphabet oder. Keys [PageUp], [PageDown] serve for navigation.
For looking at big plots, position the cursor on a small plot and hit the
Left Mouse Button. REPA will enter DiaGi mode. Use [PageUp], [PageDown]
for plotting the next or prior baseline.

## 2   Scenario 2: Adjust suppression status of one or several points

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines
exceeds 25, then REPA will show only one page. All baselines are sorted
in alphabet oder. If you do not see the baseline you are interested in
at the current plot use keys [PageUp], [PageDown] for scrolling to the
next or prior page. Select the baseline: position the cursor on a small
plot and hit the Left Mouse Button. REPA will enter DiaGi mode. Hit [F1]
key. Now mouse buttons are bound to SngAmb mode (Single point suppression
status toggle and ambiguity shift). Position the cursor to the point of
interest and hit the Central Mouse Button. Suppression status will be
flipped: if the point was good (green color) it becomes bad (red). If
the point was bad (red color), it becomes good (green). Keep in mind:
you cannot change suppression status of unrecoverable observations (black

circles). If the points lay too dense and you have difficulties in
selecting the right point, you may resize the plot. First hit <ESC> for
entering DiaGi mode, then use Central Mouse Button for window resizing,
then fit <F1> for entering SngAmb mode.

   REPA updates the plot as soon as you hit the Central Mouse Button, but
it delays updating scratch file. It stores all entered commands in stack.
Any time  you can hit <BackSpace> it undoes the latest command and
decrement the stack counter. If you hit <F10> key, REPA will discard the
latest command in the stack without writing scratch files, leaves REPA and
returns to OPTIN. If you hit <HOME> REPA writes the scratch files, leaves
REPA and returns to OPTIN. If you hit <X> or <Q> REPA writes the scratch
files and comes back to the Multi_DiaGi level of REPA.

## 3   Scenario 2: Change ambiguity of one or several points

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines
exceeds 25, then REPA will show only one page. All baselines are sorted
in alphabet oder. If you do not see the baseline you are interested in
at the current plot use keys [PageUp], [PageDown] for scrolling to the
next or prior page. Select the baseline: position the cursor on a small
plot and hit the Left Mouse Button. REPA will enter DiaGi mode. Hit [F1]
key. Now mouse buttons are bound to SngAmb mode (Single point suppression
status toggle and ambiguity shift). Position the cursor to the point of
interest and hit the Left Mouse Button if you would like to decrease the
ambiguity or Right Mouse Button if you would like to increase the
ambiguity counter. The point will be shifted to the down (Left Mouse Button)
or up (Right Mouse Button) one ambiguity spacing. The amount of ambiguity
spacing is shown at the upper right corner of the plot.

   It may occur that the point is shifted away from the plotting area.
In that case the point will be shown just beyond the upper or lower
border. Command <M> sets the plotting area around only good points,
command <Alt/M> sets the plotting area around good and bad points,
command <Ctrl/M> sets the plotting area around all points: good, bad
and unrecoverable. In addition to that the plotting area may be adjusted
manually. Hit <ESC> to enter DiaGi mode, then hit the Central Mouse Button
for adjusting the plotting area, then hit <F1> to come back to SngAmb
mode/

   REPA updates the plot as soon as you hit the Central Mouse Button, but
it delays updating scratch file. It stores all entered commands in stack.
Any time  you can hit <BackSpace> it undoes the latest command and
decrement the stack counter. If you hit <F10> key, REPA will discard the
latest command in the stack without writing scratch files, leaves REPA and
returns to OPTIN. If you hit <HOME> REPA writes the scratch files, leaves
REPA and returns to OPTIN. If you hit <X> or <Q> REPA writes the scratch
files and comes back to the Multi_DiaGi level of REPA.

   You can intermix ambiguity shift and suppression status toggle

(Central Mouse Button) commands.

## 4   Scenario 3: Change ambiguity of a group points

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines
exceeds 25, then REPA will show only one page. All baselines are sorted
in alphabet oder. If you do not see the baseline you are interested in
at the current plot use keys [PageUp], [PageDown] for scrolling to the
next or prior page. Select the baseline: position the cursor on a small
plot and hit the Left Mouse Button. REPA will enter DiaGi mode. Hit [F2]
key. Now mouse buttons are bound to GrpAmb mode (Group ambiguity shift).
Position the cursor to the point with respect of which you would like to
resolve ambiguities and hit the Center Mouse Button. Ambiguities of all
points will be resolved with respect to the current cursor position.

   You may want to change all points at N ambiguities. There are several
ways to achieve it. One of the ways: enter SngAmb mode by hitting <F1>,
select any point shift it repeatedly at the desired number of ambiguities.
If the point goes beyond the plotting area you need to toe adjust the
plotting area by hitting either <M> (box around all points), <Alt/M>
(box around good and bad points), <Ctrl/M> (box around good points only).
Then bit <F2> for entering GrpAmb mode, position the cursor to that point
and hit Central Mouse Button.

   REPA updates the plot as soon as you hit the Central Mouse Button, but
it delays updating scratch file. It stores all entered commands in stack.
Any time  you can hit <BackSpace> it undoes the latest command and
decrement the stack counter. If you hit <F10> key, REPA will discard the
latest command in the stack without writing scratch files, leaves REPA and
returns to OPTIN. If you hit <HOME> REPA writes the scratch files, leaves
REPA and returns to OPTIN. If you hit <X> or <Q> REPA writes the scratch
files and comes back to the Multi_DiaGi level of REPA.

## 5   Scenario 4: Change Suppression status of a group of points

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines
exceeds 25, then REPA will show only one page. All baselines are sorted
in alphabet oder. If you do not see the baseline you are interested in
at the current plot use keys [PageUp], [PageDown] for scrolling to the
next or prior page. Select the baseline: position the cursor on a small
plot and hit the Left Mouse Button. REPA will enter DiaGi mode. Hit [F3]
key. Now mouse buttons are bound to GrpTgl mode (Group suppression status
toggle).

   If you want to suppress all observations with residuals by modulo greater
than some value, position the cursor to the points with that value

(does not matter +value or -value) and hit the Left Mouse Button.

   If you want to restore all observations with residuals by modulo less
than some value, position the cursor to the points with that value
(does not matter +value or -value) and hit the Right Mouse Button.

   Keep in mind: these two operations are not reciprocal.

   REPA updates the plot as soon as you hit the Central Mouse Button, but
it delays updating scratch file. It stores all entered commands in stack.
Any time  you can hit <BackSpace> it undoes the latest command and
decrement the stack counter. If you hit <F10> key, REPA will discard the
latest command in the stack without writing scratch files, leaves REPA and
returns to OPTIN. If you hit <HOME> REPA writes the scratch files, leaves
REPA and returns to OPTIN. If you hit <X> or <Q> REPA writes the scratch
files and comes back to the Multi_DiaGi level of REPA.

## 6  Scenario 5: Show dependence of Cable calibration versus air temperature

   Invoke REPA by hitting "P" at the OPTIN menu. REPA creates the window
with small plots for each baseline. If the total number of baselines
exceeds 25, then REPA will show only one page. All baselines are sorted
in alphabet oder. Position the cursor away from the small plot and hit
the button <T>, or position the cursor on the box "Change argument" and
hit the Left Mouse Button. You will see the menu of supported argument
types. The current argument type is displayed in the box with darker color.
Position the cursor to the box with desired argument -- "Air temperature
at station 1" in our case and hit first Left Mouse Button and then Right
Mouse Button. You will return back to the Multi_DiaGi window. Position the
cursor away from the small plot and hit the button <V>, or position the
cursor on the box "Change value" and hit the Left Mouse Button. You will
see the menu of supported value types. The current value type is displayed
in the box with darker color. Position the cursor to the box with desired
argument -- "CABLE station 1" in our case and hit first Left Mouse Button
and then Right Mouse Button.

Questions and comments about this guide should be sent to:

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