GMTRS: a SCADA class UI & code for extended automation of IBA experiments

- allows automation of Ion Beam Analysis (IBA) experiments
- provides step-by-step SCADA (supervisory command and data acquisition) with full authoritative digital positional motors control

GUI looks…

… and features

- Buttons set/select configurations
- Buttons trigger single/multiple (automated) actions
- Buttons labels attempt titled to be self-explainable…
- Greyed out buttons/groups are temporarily unavailable (option/ /context dependent)
- Buttons tool-tips available: try hover the mouse cursor over a button you want to know about

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GMTRS quick help

Allows to select the the beam line:
- select one and press SET to set it

Motion control and coordinates display:
- only active after beam line has been set
- Scan and Random only available after the ADCs have been set
- STOP only active whence there is motion

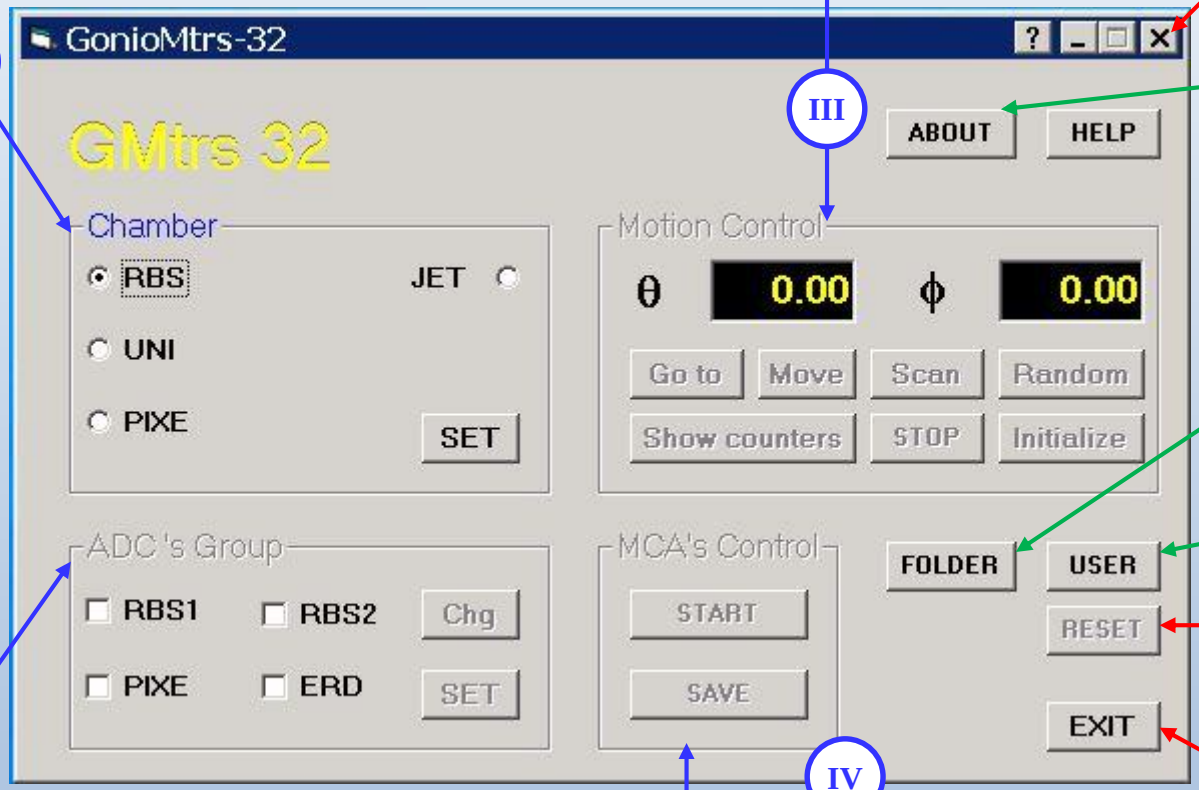
ENDs program
- same as EXIT
(allows reversing)

Authorship and current version

Changes working folder (should be set at beginning)…

Sets users private parameters…

FULL RESET:
- resets beam line and ADCs groups
(only after I and II set)



Allows to select the ADCs to work with:
- only active after beam line has been set
- select wanted ADCs
- press SET to set it...

Data collection and storage:
- only active after ADCs have been set
- COLLECT/STOP: toggles ADCs on/off
- SAVE: saves active ADCs data to disk

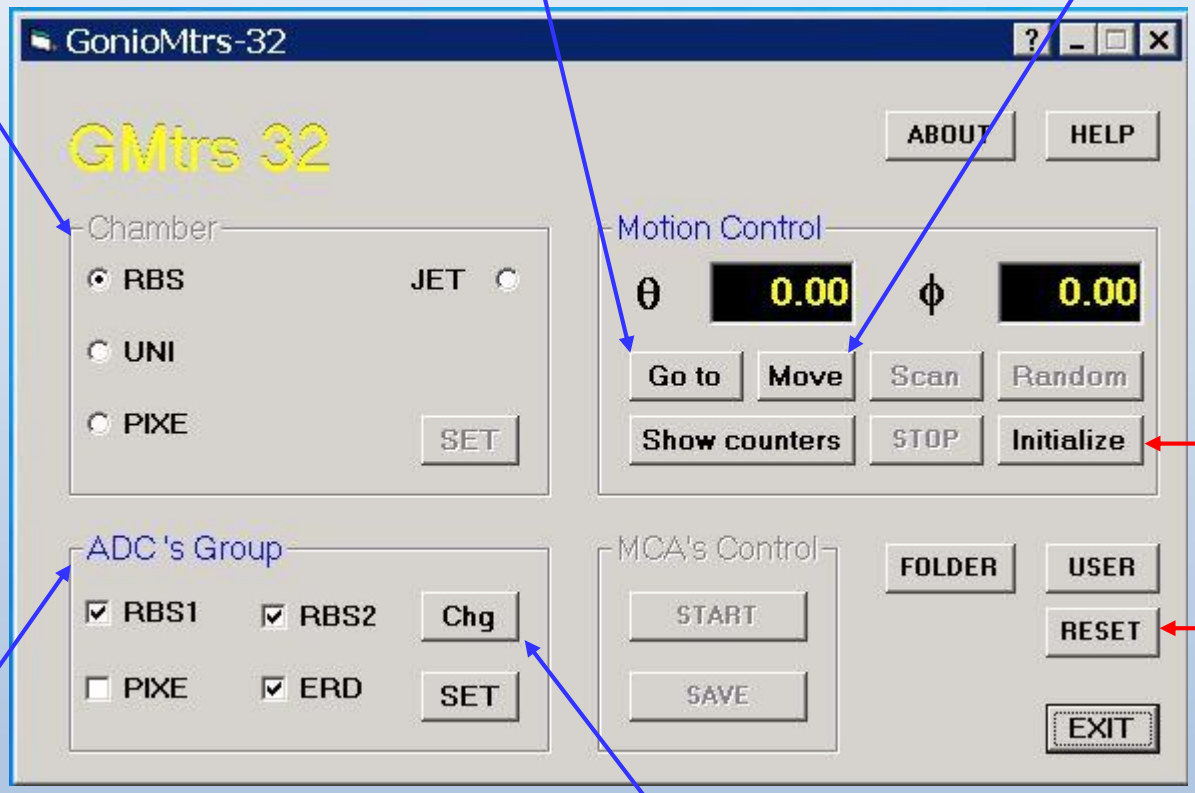
Stops active ADCs , removes ADCs GUI, removes SCADA UI, and ENDs program

GMTRS quick help

Beam line selected
- changes unavailable after setting
- to change press RESET button

Used to set coordinates displacements (relative)

Used to set targeted coordinates (absolute)



Set/reset position coordinates

FULL RESET:
- resets beam line and ADCs groups

II

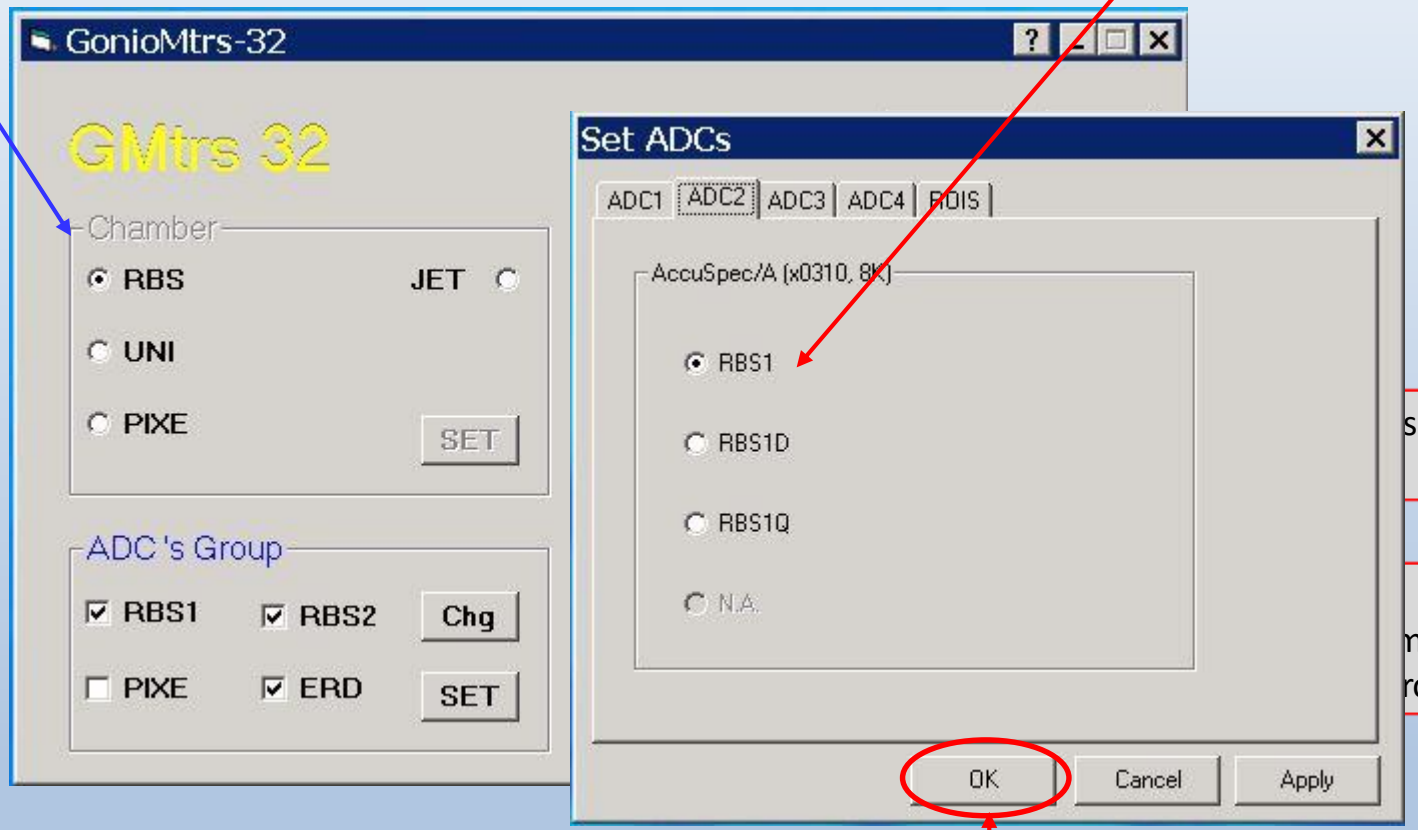
Allows to select the ADCs to work with:
- only active after beam line has been set
- select wanted ADCs
- press SET to set it...

Only available before ADC's group SET:
- allows changing ADCs configurations
- allows changing maximum number of ROIs
- unavailable after ADC´s SET

GMTRS quick help

Beam line selected
- changes unavailable after setting
- to change press RESET button

For as many ADC configurations list panels as needed (up to 4) choose one of the available ADC configurations by selecting the selection button corresponding to the targeted one...



sition

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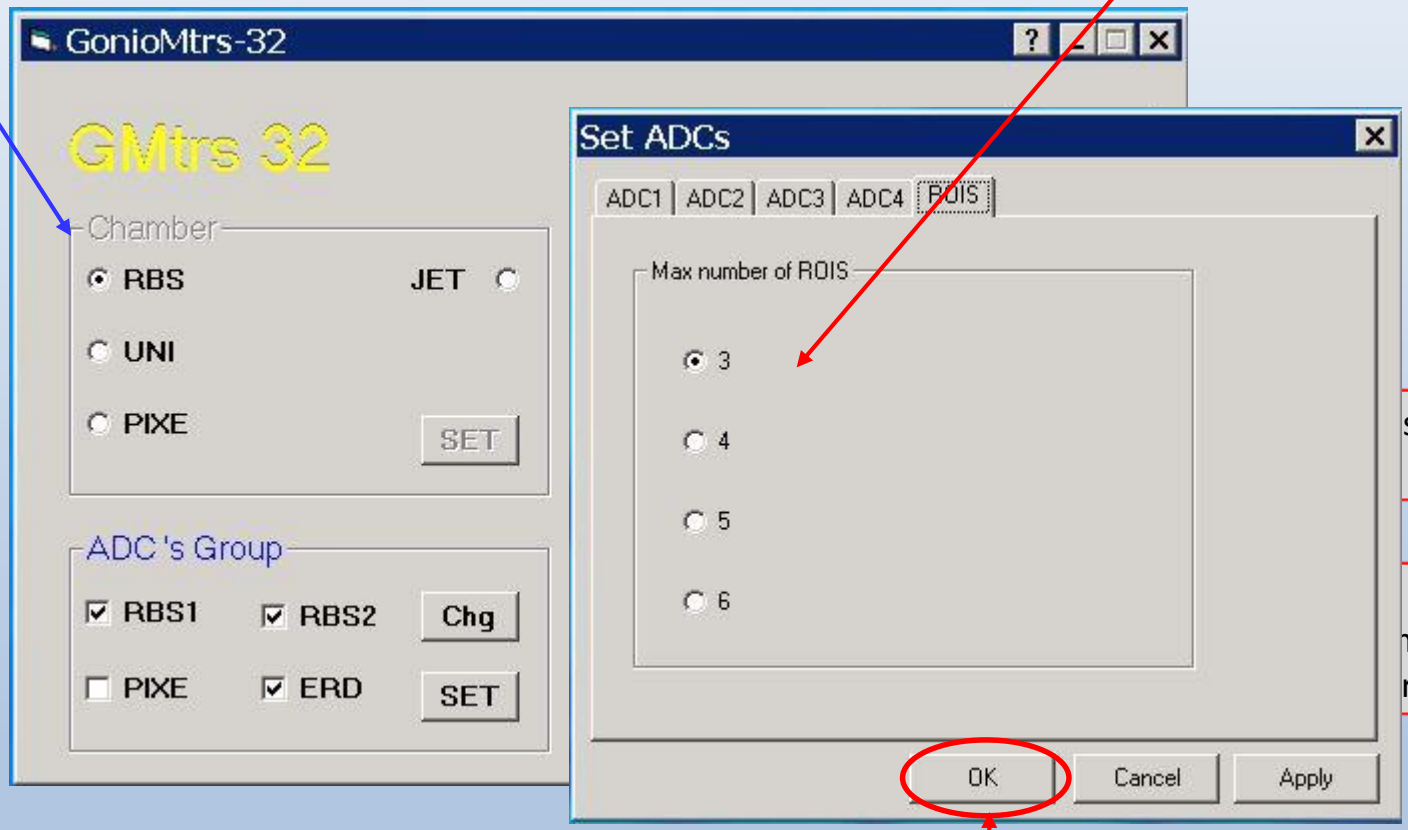
... then press the OK (or the Apply) button to confirm and pass the new configurations to the program.

WARNING: if you do not understand the configurations, ask someone knowledgeable prior to commit them.

NOTICE: once set the new settings can only be changed through FULL RESET.

Beam line selected
- changes unavailable after setting
- to change press RESET button

The default maximum number of ROIs can be extended from 3 up to 6.
Upon choosing more ROIs be warned that the display with the scan results may get cluttered



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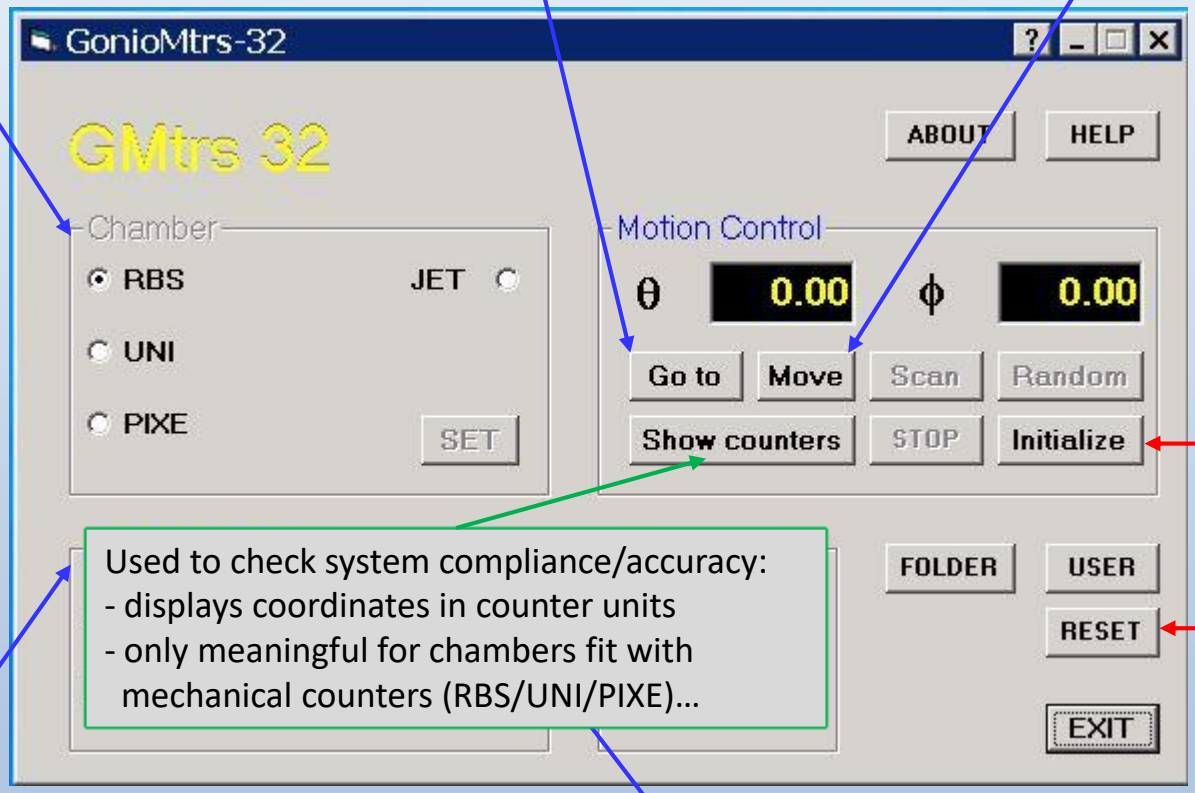

Set/reset position coordinates

Used to check system compliance/accuracy:
- displays coordinates in counter units
- only meaningful for chambers fit with mechanical counters (RBS/UNI/PIXE)...

FULL RESET:
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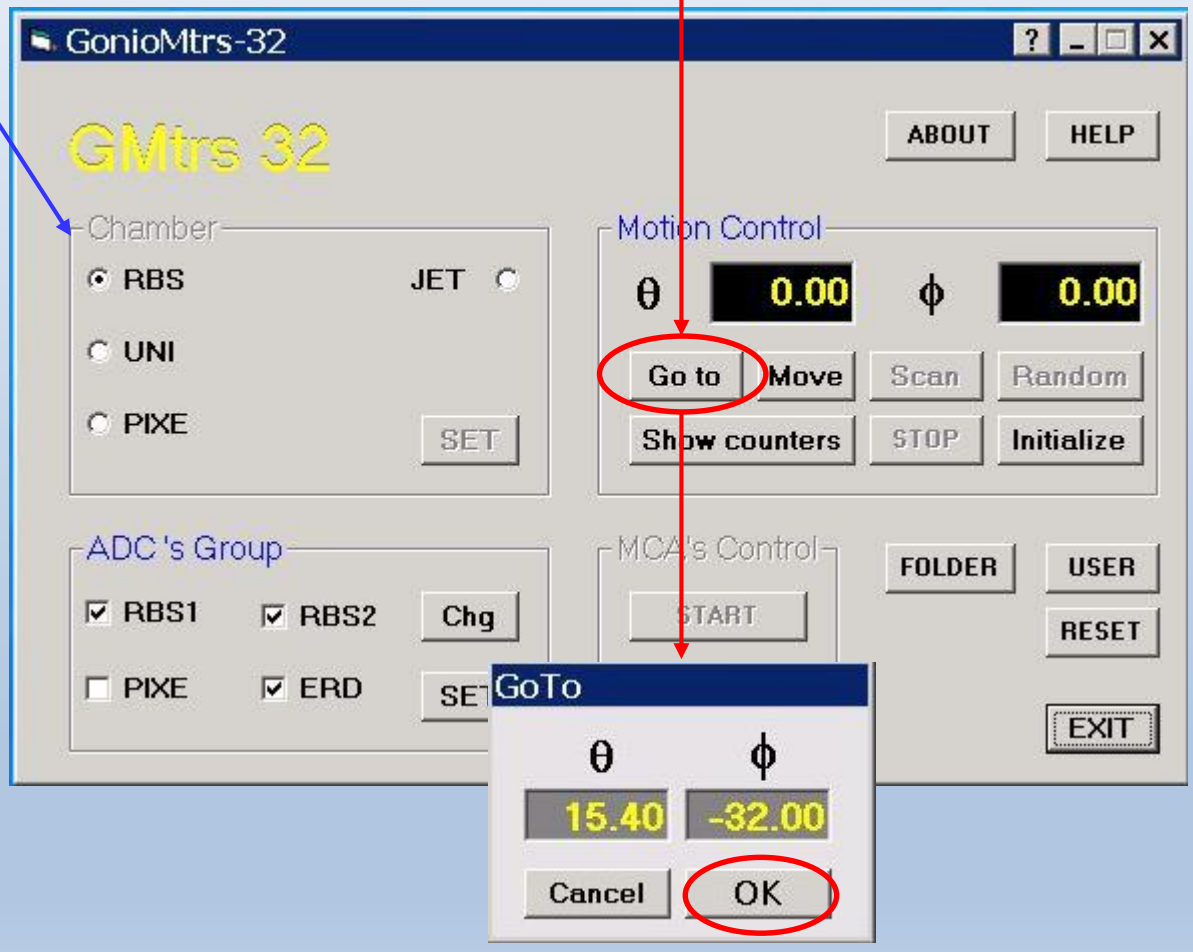
Beam line selected

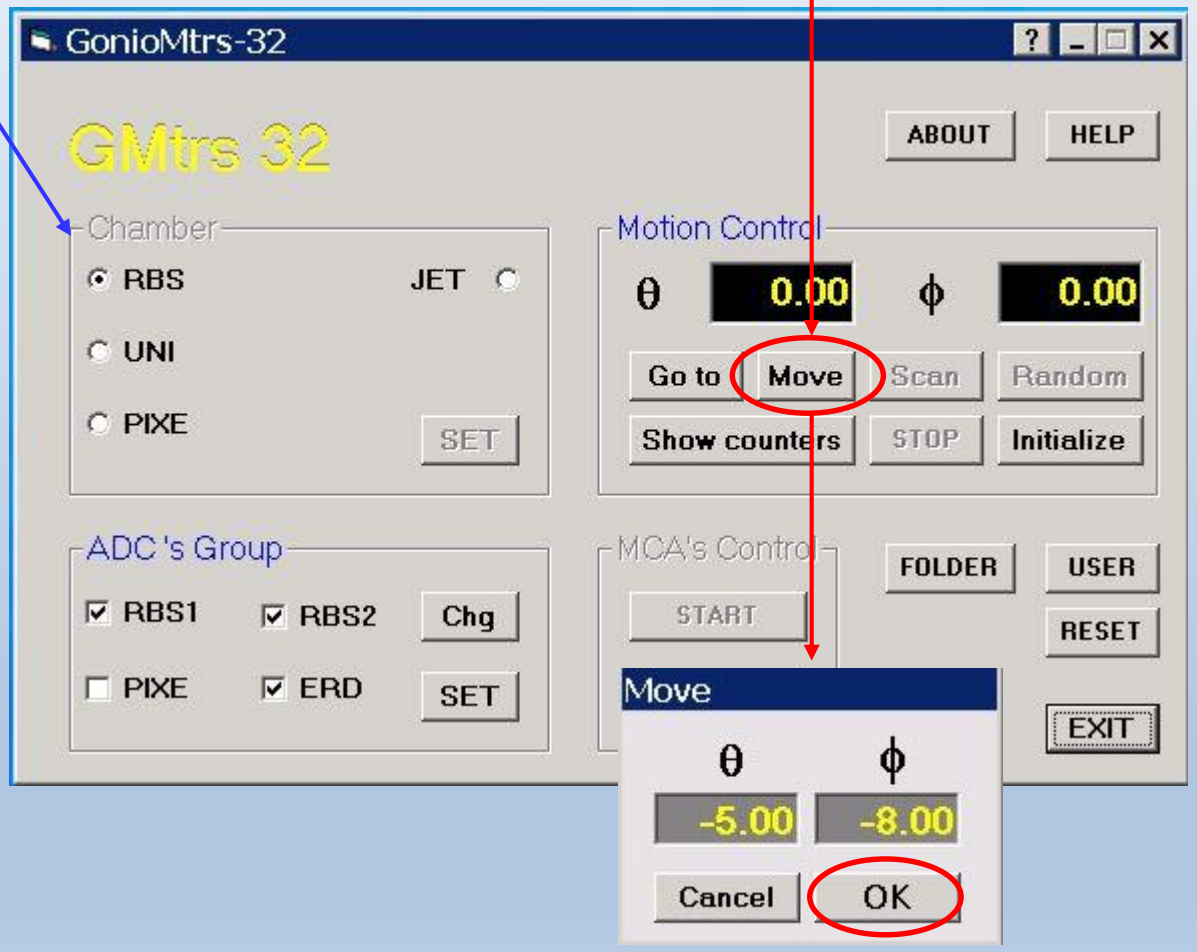
Insert new target coordinates (absolute) and press OK (Cancel to abort)



GMTRS quick help

Beam line selected

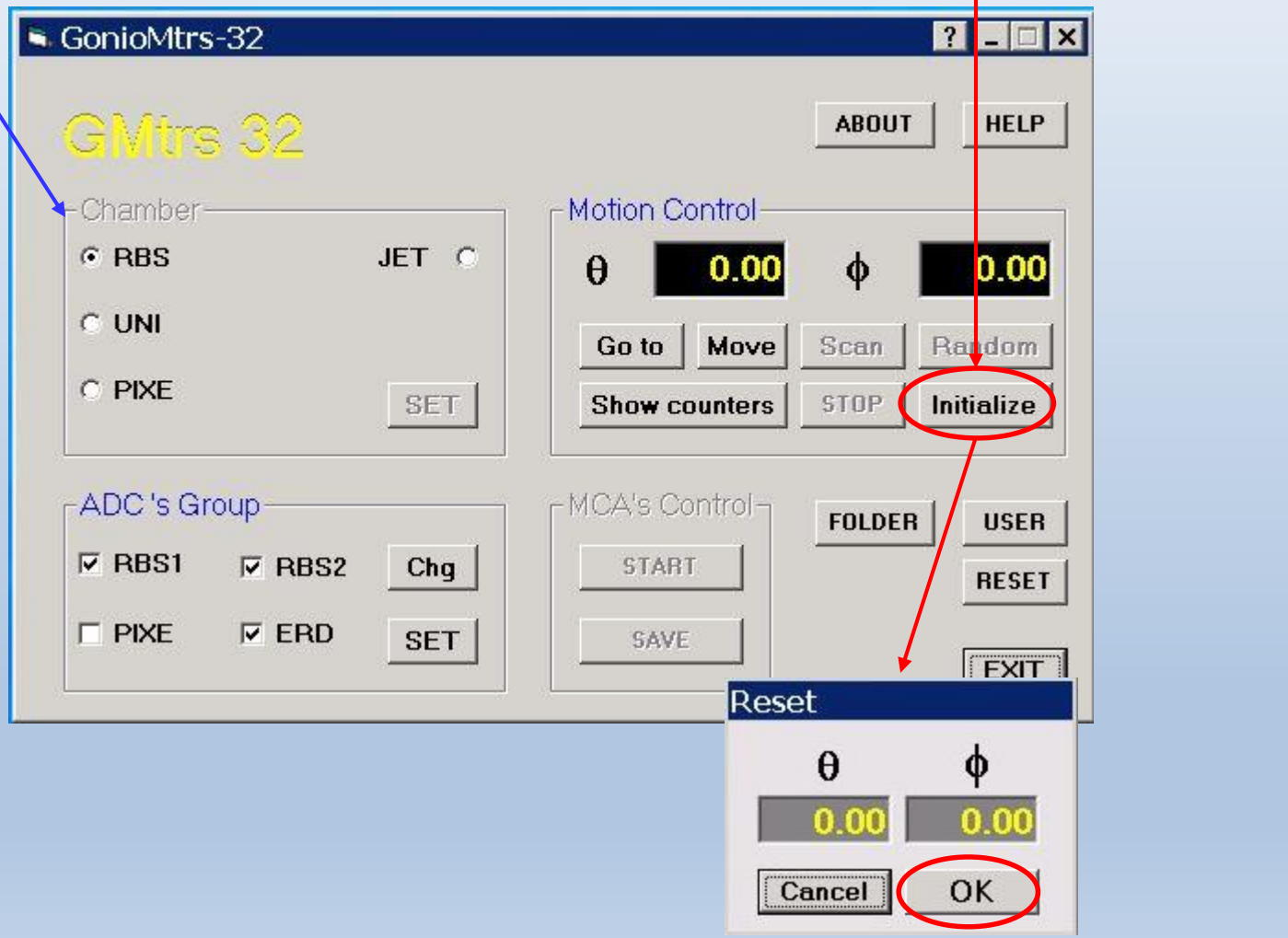
Insert new displacements (relative) and press OK (Cancel to abort)



GMTRS quick help

Beam line selected

Insert present coordinates (absolute) and press OK (Cancel to abort)



GMTRS quick help

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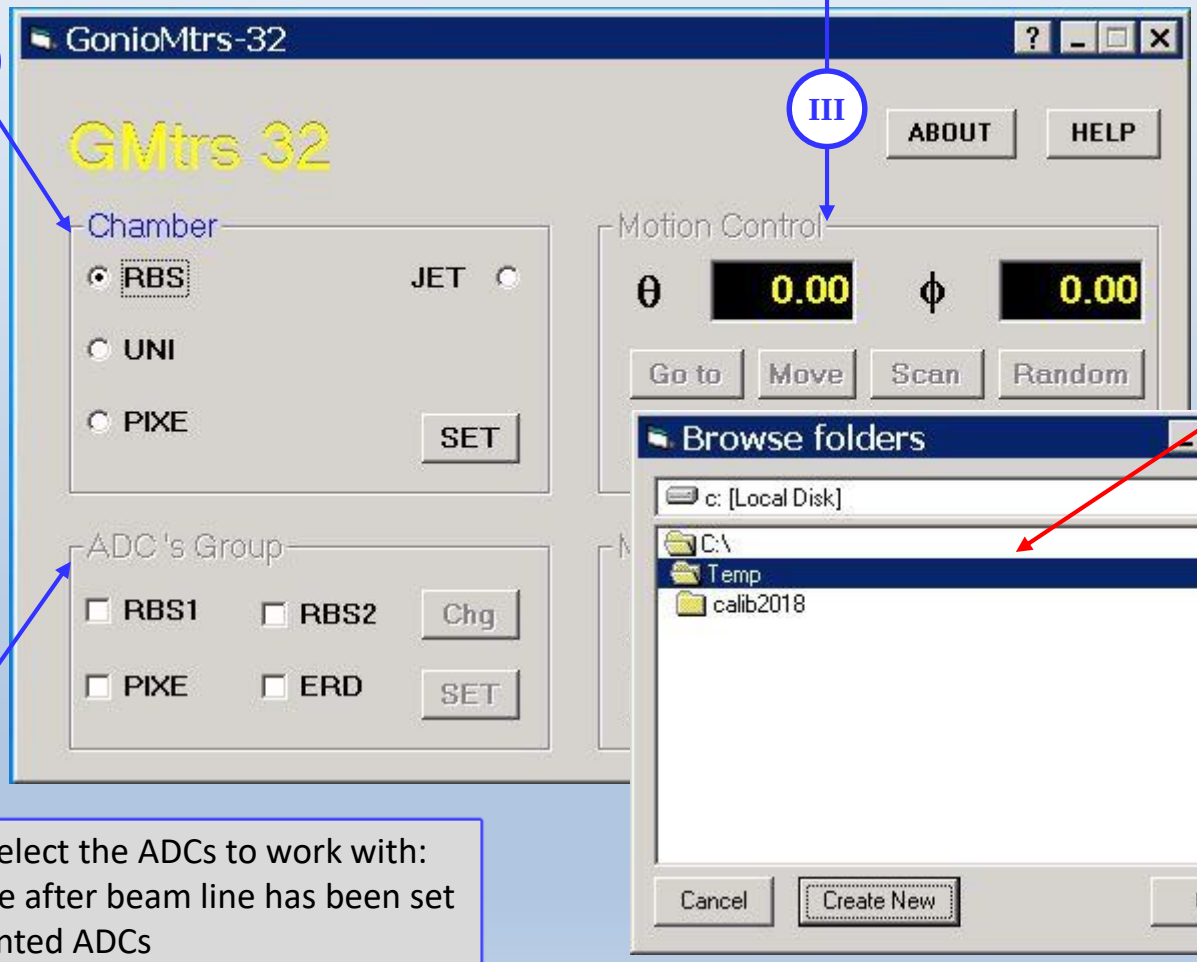
- STOP only active whence there is motion



Changes working folder (should be set at beginning)

Allows to select the ADCs to work with:
- only active after beam line has been set
- select wanted ADCs
- press SET to set it...

- Select an existing working folder and press OK
- Create (and select) a new folder and press OK

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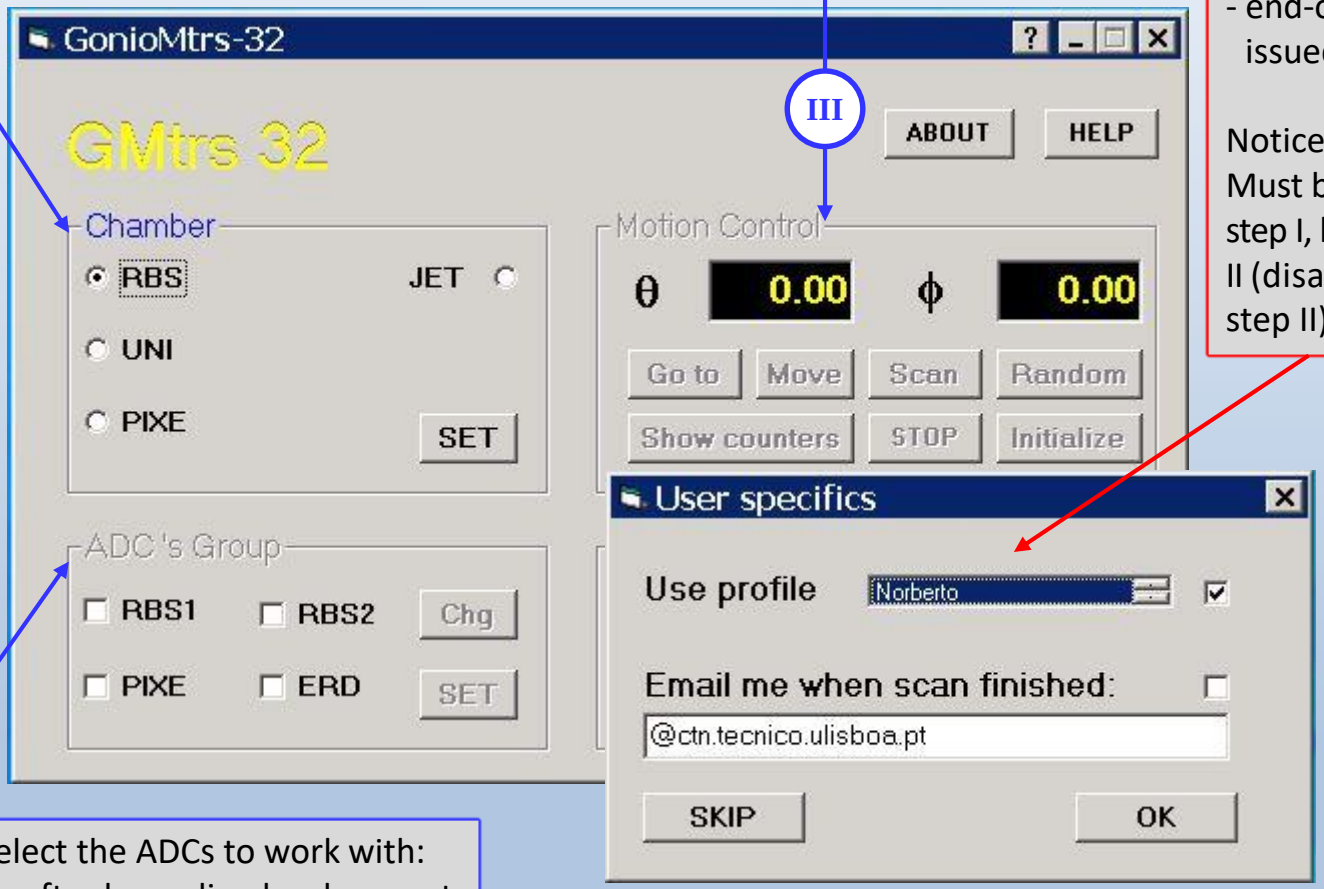
Sets users specific choices…
- detector ids. for file names
- end-of-run info issued by email

Notice:
Must be set after step I, before step II (disabled after step II)



Allows to select the ADCs to work with:
- only active after beam line has been set
- select wanted ADCs
- press SET to set it...

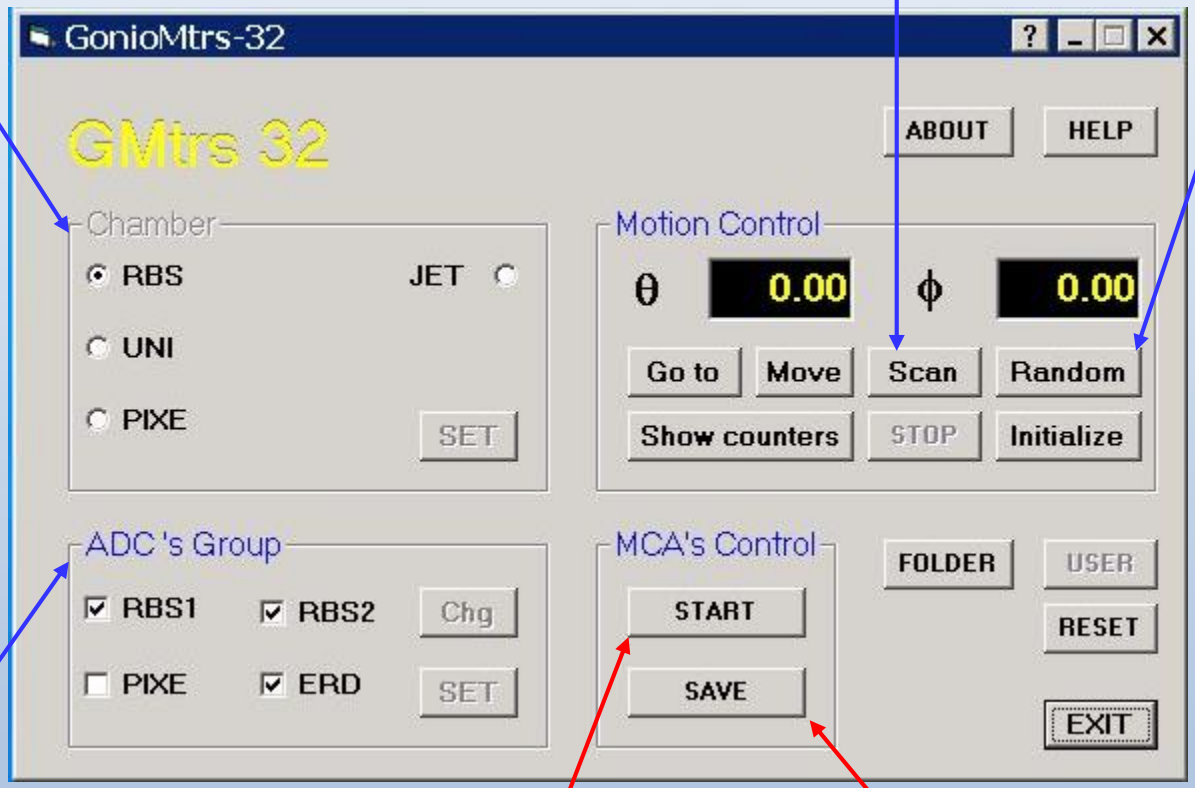
- Check the 'Use profile' check box
- select an existing user profile and press OK
  NOTICE: selection is mandatory (or profile will be ignored)

GMTRS quick help

Beam line selected

Used to set differential scan:
- each data point/spectrum saved individually

Used to set cumulative scan:
- data points added together
- only total spectra are saved

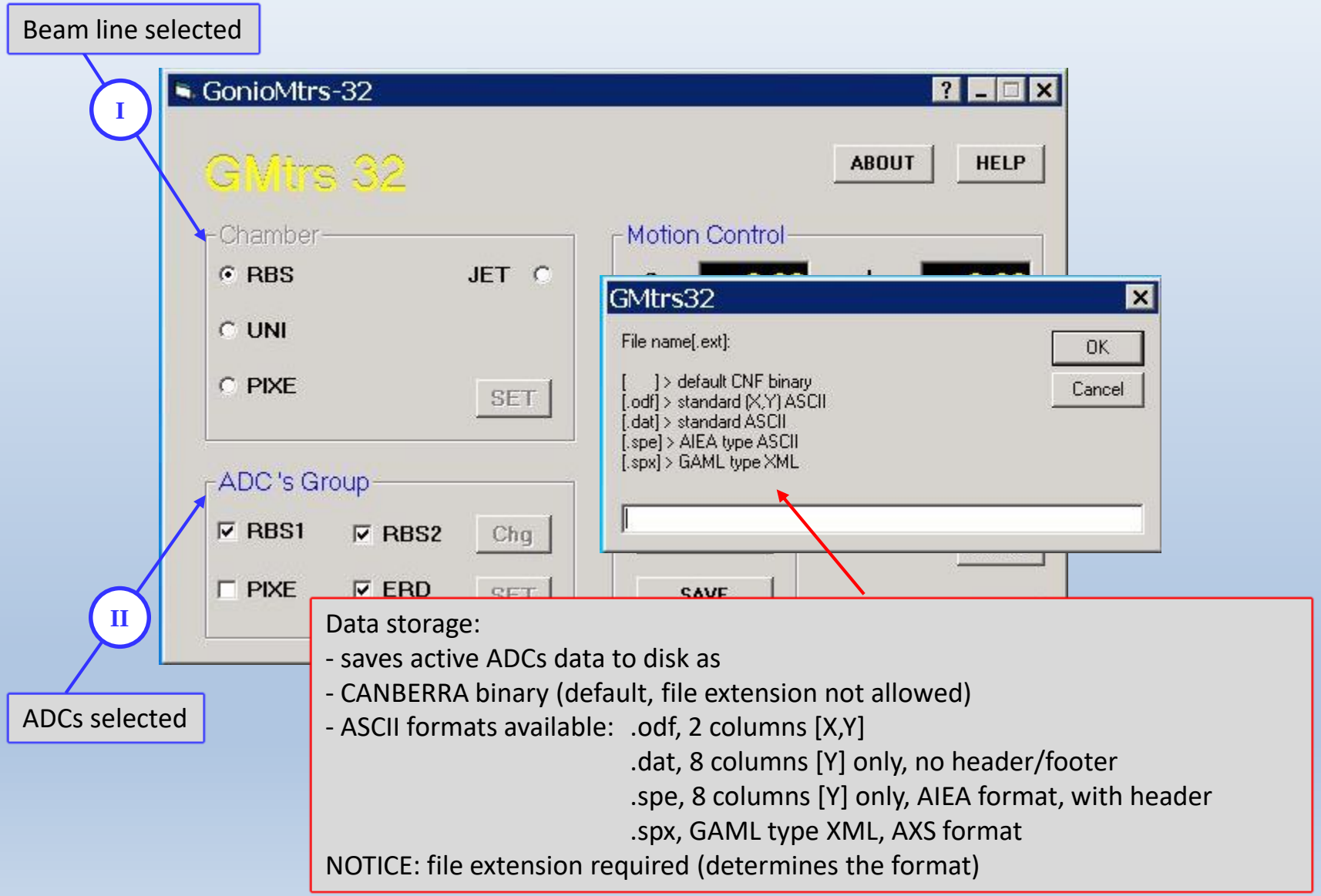


ADCs selected

Data acquisition:
- START/STOP toggles active ADCs on/off
- ADCs start synchronously

Data storage:
- saves active ADCs data to disk as
- CANBERRA .CNF binary (default)
- ASCII formats available (cf. below)

GMTRS quick help



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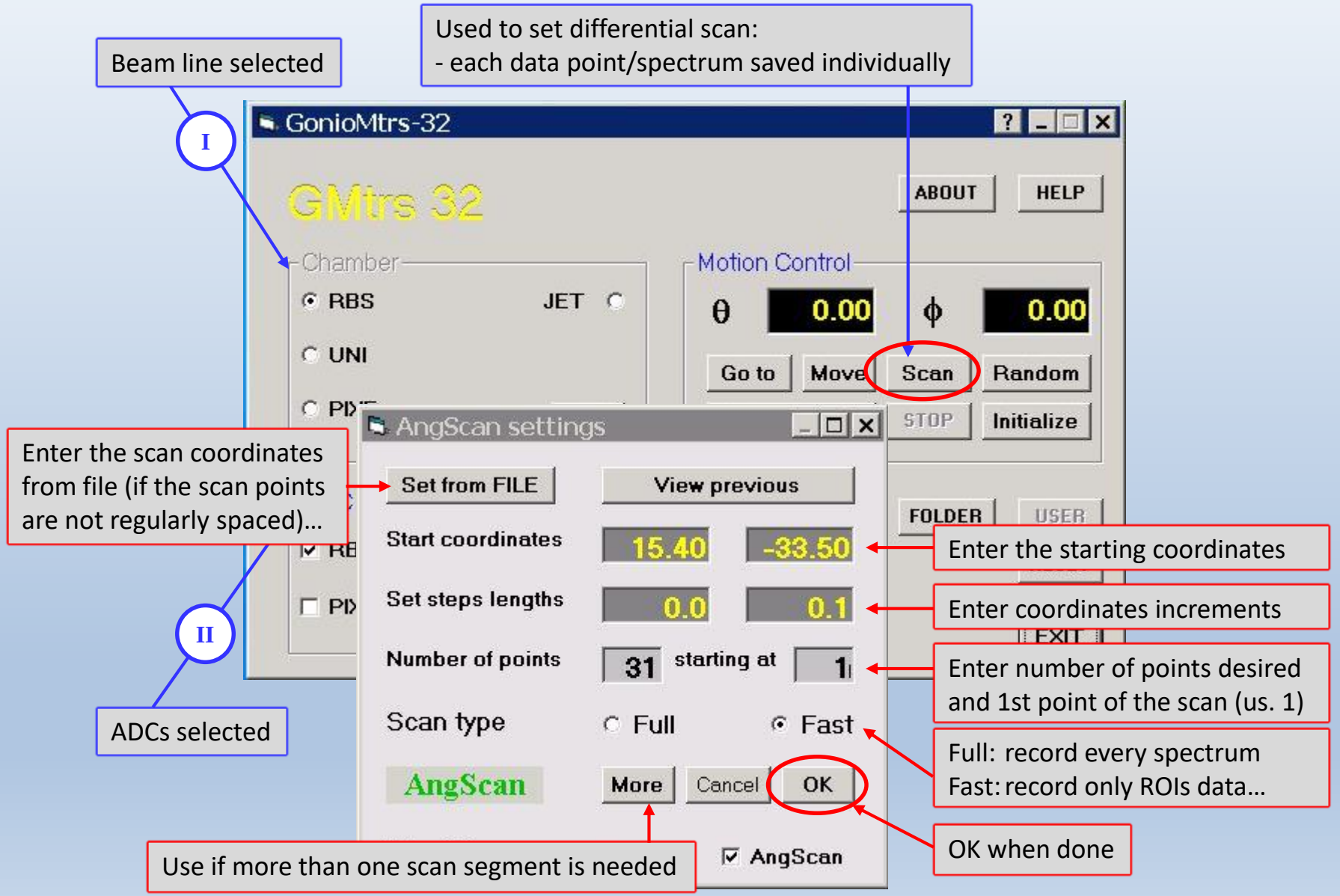

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