How to use FM_TOOL to calculate P-wave first motion focal mechanisms

FM_TOOL is a graphical driver to calculate P-wave first motion focal mechanisms. Read man pages for FM_TOOL, DBFPFIT and AEIC_DBADDEMA for more detailed info.

1) Start FM_TOOL by typing:
   fm_tool
   or
   fm_tool [database] [origin]
   where [DATABASE] and [ORIGIN] can be either given through FM_TOOL.PF parameter file or interactively through FM_TOOL. These parameters are not required to start the GUI.

2) Enter correct database and origin number in two entry windows at the top of the tool. To find out which orid you need you may open database first by clicking "open database" button.

3) If this is a new run, subset input database for your event of interest by clicking "save new db". If you (or someone else) have worked with this event previously, you 'll not be able to save the subset database unless you have different DATA_PATH setting in FM_TOOL.PF. Instead, you can work with it directly by typing correct database name and origin number. In this case skip "save new db" option.

4) To pick first motions, start SMARTPICK by clicking "open dbpick". From the SMARTPICK GUI, click "start dbpick" (upper button in the middle panel) and then click "Next event" (light blue button in the middle of the middle panel).
   Check and assign all P-wave first motions (shift-middle-click on P-arrival flag):
   fm - for down motions, fm + for up motions, fm ? for unknown.
   All first motions have to be checked and assigned.

5) Calculate focal mechanism by clicking "calculate focal mechanism" button.

6) To see results click "view results" button. It'll show beach ball plot with first motions and some parametric info. To print this plot, click "print results" button. It'll send this plot to your default printer.

7) Review your focal mechanism, correct any first motions that you deem necessary. Calculate new mechanism. You can repeat this process as many times as necessary.

8) To update fplane table of the main input database click "update fplane table". This should be done by the QCing seismologist only.

9) Some additional options are available for using DBFPFIT for research purposes, such as making composite runs, changing other settings. Read DBFPFIT man page for more details. You can change DBFPFIT.PF options by clicking "edit dbfpfit parameter file". Updated parameter file will be saved in your working directory indicated by DATA_PATH parameter in FM_TOOL.PF.