Frequency Domain System Identification Toolbox
Usage and Examples
Hints for First-Time Users

I. Using the Graphical User Interface:

Type `fdtool` to start.

In the main window of the GUI, extensive helps are available, covering general use, load/save data, etc.

- Help mechanisms:
  - tooltipstrings in every subwindow: when the mouse is moved above a control object, small "balloon helps" pop up with a short information text. Note: the main window contains so-called patches which do not have tooltipstrings.
  - There is a Help menu in every window. Under this, there is a special submenu, 'Help on Object': the selected object will be explained in a separate window
- How to run demonstrations: In the main window select Help / Introductory Demos (or Complex Examples and Demos), then select the desired one from the window. Recommended demos:
  - Introductory Demos / To GUI /
    - Helps: Some introduction to the help facilities
    - Creating data objects: Examples to generate and import data objects
    - Processing time domain data: A simple series of steps
  - Complex Examples and Demos
    - Bandpass filter %Quick processing of freq. domain data
    - Electrical machine %Processing data from a wide frequency band
    - Wilkinson-type system %Processing a badly conditioned system, using orthogonal polynomials
- Record and replay your GUI actions: select the menu Recorder / Open, push Record on the recorder, now use the GUI, then press stop. Save the sequence of actions if you want. Replay: rewind recorder to Action 1, then press PLAY.

II. Command-line toolbox

- Load sample objects to workspace:
  - `load robotarm %load sample data`
  - `load rarmmods %load sample models`
- Utilities: `plot(m)`, `plot(f)`, `plot(robotarm_6models)`, `bode(m)`, `nyquist (m)`, `diff(robotarm_6models{1},m)`
- Preprocess data, e.g. remove the effect of a known parametric model: `f/m`
- Illustrate uncertainty of identified model: `cloud(m)`, `zoom on`, and then zoom-in around

the right valley of the transfer function to see the different transfer functions
- Combine models (series connection of systems): `m*m`
- Convert models to/from the Control System Toolbox objects: `ss(m), tf(m), zpk(m)` `fidmodel(tf(m))`
- Information on objects (tiddata, fiddata, fidmodel), e.g.:
  - `help fiddata    %help on creator`
  - `help(fiddata)  %description of object`
  - `helpc(fiddata) %contents of class directory`
- Information on new call: `help elis, help simfou, help eliscost,` etc.
- Help on earlier (more complicated) syntax: `oldhelp simfou, oldhelp elis,` etc.
- List possible call forms: `usage simfou` (the command `usage` also works for other MATLAB functions in general)

III. Self-tests

- Test to make sure that no name clash happens with function M-files on the MATLAB path: run `fdunique`
- General test of the whole GUI: simply call `fdguitst`, and let it run untouched for about an hour

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