Improving Pebbles speed

A) **General**. I suggest to have the RAM as free as possible (close all running programs, have a look also to the programs which are automatically run upon startup). If you are using a Windows-based PC, you may also check how much free memory you have (press ctrl-alt-del and use the windows utility) and whether your PC is swapping (data transfer from/to RAM to/from hard disk).

B) **Time to start the stand-alone program** is mostly spent in loading the Matlab runtime library (MCR). I have no good hint to speed up program loading (except for using a faster PC). I made some test on my pc (intel core duo E8400 3GHz, 4 GB RAM, windows 7 32bit, windows performance index 5.9): first time I started the standalone it took 15 sec to load, the 2nd, 3rd, 4th time it took just 5 sec (maybe due to some prefetching?).

C) **Time to load images** is mostly spent in:

1 - looking for image data in the file (required)

2 - removing "hot spots" from the image (optional)

Step 1 should take just a few seconds at most for images up to 2k x 2k.
Step 2 can be considerably longer. Thus, image loading can be slow because of "hot spot" removal. “Hot spots” are small white" spots, a few px wide, caused by stray x-ray hitting the TEM ccd detector. At the moment, removing hot spots involves ordering the image pixels as to their magnitude and can thus be time consuming.
If your images have no (or negligible) hot spots you can turn off the hot spot removal by changing the value of the p_cb_LoadImage_REMOVE_HOT_SPOTS parameter to zero (press the button with the wrench icon in Pebbles to access configurable parameters).
BTW, hot spot removal affects the displayed image only, fitting is performed on the original image.

D) **Fitting is slow**! This may occur because TEM image magnification is too large. Since the TEM CCD detector size is constant, high magnification translates into high *digital* resolution, i. e., NPs in the micrograph span too many pixels. Since the number of model function evaluation grows quadratically with the NP width (in pixels) it can become very large. Actually, image resolution of, say, 15-30 pixels/NP is sufficient for accurate fit and good speed. Higher resolution brings about lower speed with no accuracy improvement.
Note also that at too high magnification SCATTERING contrast becomes smaller (slower, more difficult fitting) and eventually is substituted by PHASE contrast (HRTEM, NP fit not possible).
If this is the case with your TEM images you can

i) take new images at lower magnification (= lower digital resolution) or

ii) digitally reduce the resolution of the original image (average neighboring pixels).

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