Tutorial for analyzing 4Pi data using SMAP

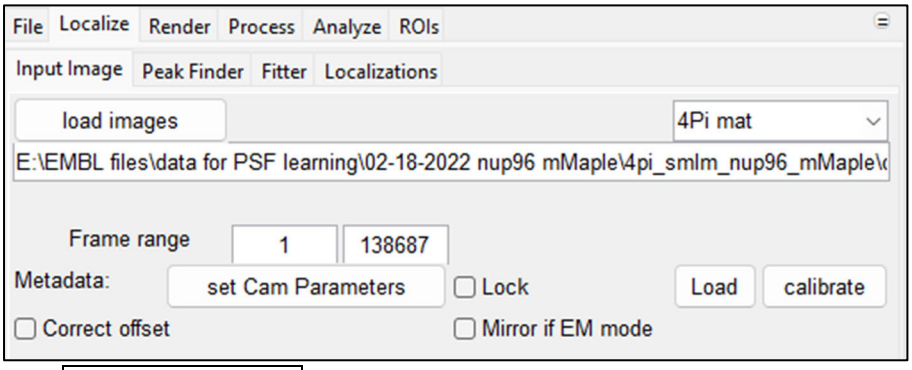
Tested on Matlab 2021b.

Future issues will be fixed in the develop branch at https://github.com/jries/SMAP.

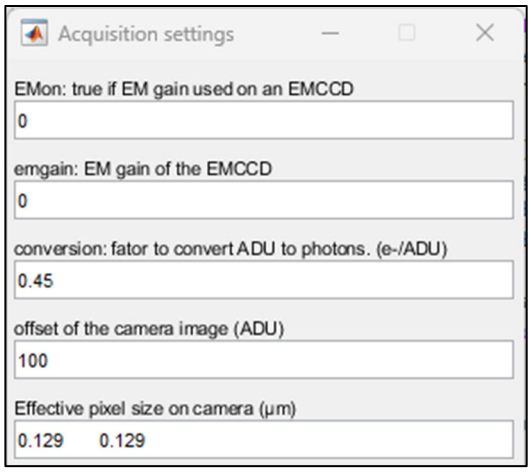
First generate the PSF model (.h5) file using uiPSF, then follow the steps below for localization in SMAP.

1. Open MATLAB, set the working directory to C:\Users\Ries Lab\git\SMAP\
2. In Matlab command window, run: SMAP
3. In SMAP GUI, open tab Localize, click Change and select the file 'fit_4pi.txt'.

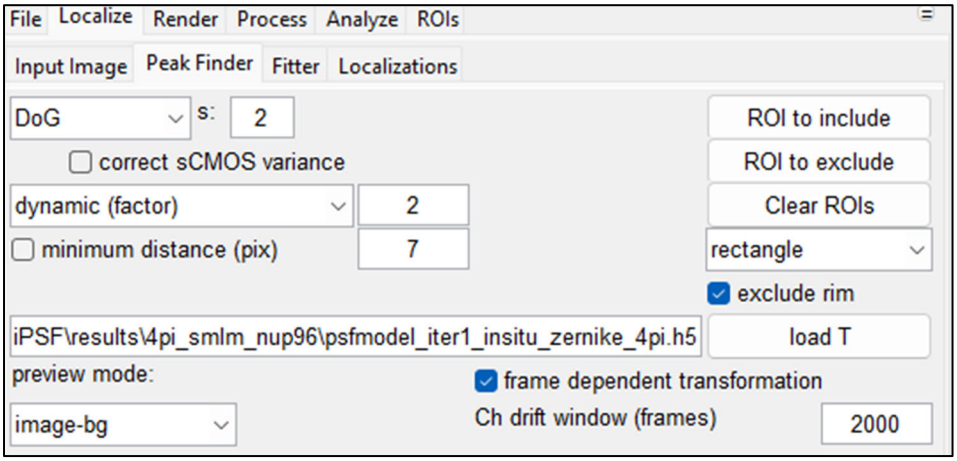
4. In SMAP GUI, open tab Localize -> Input Image, click load images and select the first .mat file in the data folder.



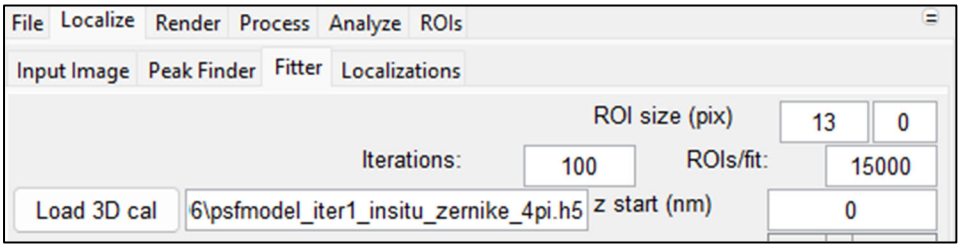
5. Click set Cam Parameters, change the 'conversion', 'offset', 'pixel size' based on your setup.



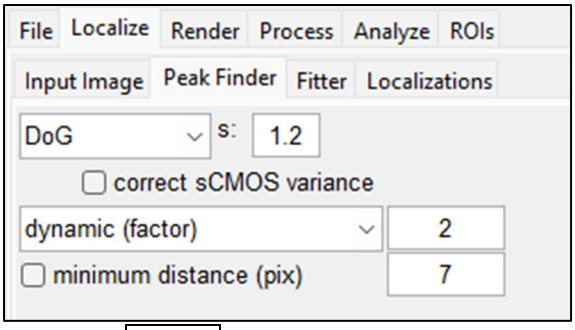
6. Open tab Localize -> Peak Finder, click load T, select the .h5 file from uiPSF.



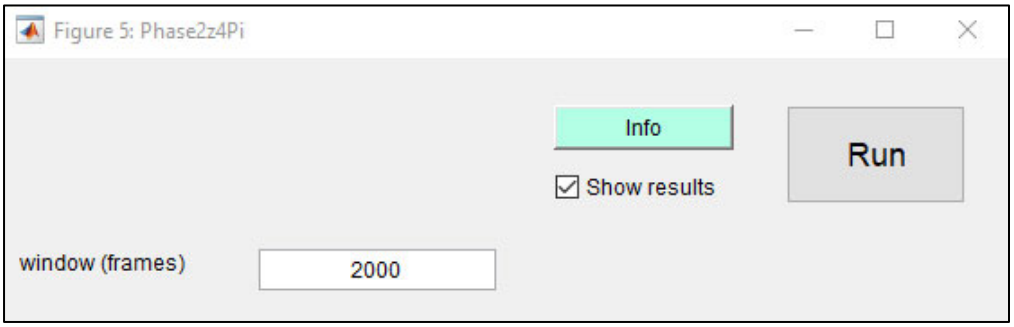
7. Open tab Localize -> Fitter, click Load 3D cal, select the same .h5 file. Set 'Iterations' to 100.



8. In Localize -> Peak Finder, click Preview and adjust 'dynamic (factor)' based on the output image.

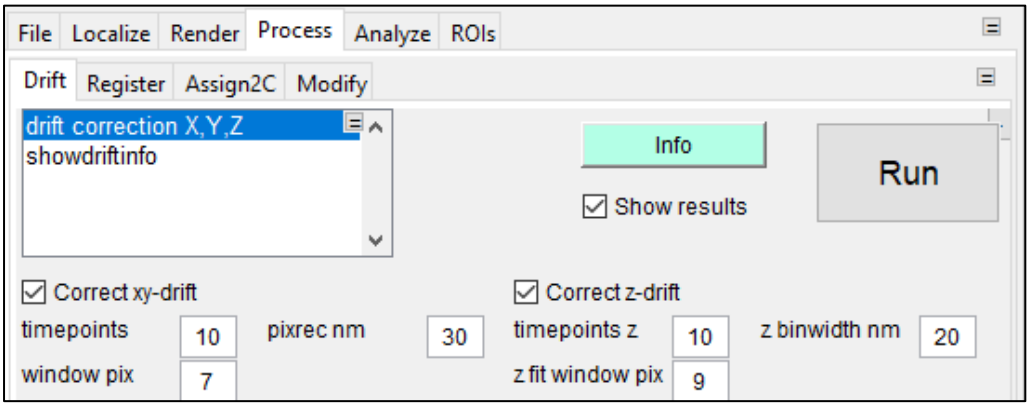


9. Then click Localize.
10. After localization is finished, in tab Render -> Layers1, uncheck '□ group'. In the menu, go to Plugins -> Analyze -> sr3D -> Phase2z4Pi, click Run.



11. In Render -> Layers1, for 'Colormode', select 'z' then 'normal'. The Render tab will then display correctly.

12. Go to tab Process -> Drift, and set ‘pixerec nm’ to 30 and ‘z binwidth nm’ to 20. Then click Run.



13. In the menu, go to Plugins -> Process -> Drift -> driftcorrection_dme. Check ‘use median CRLB’. Then click Run.