

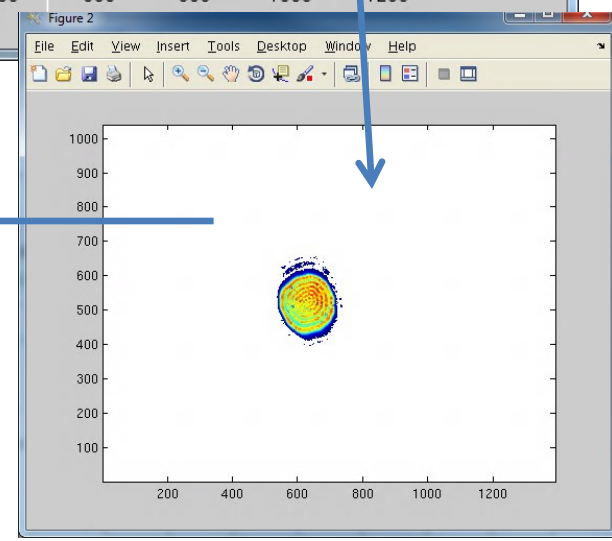
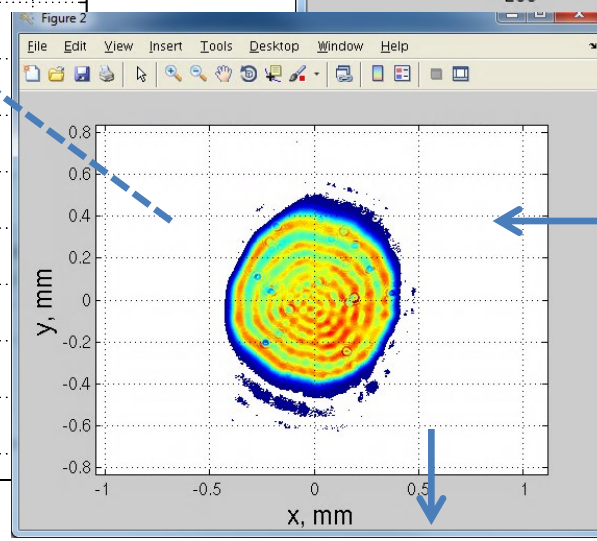
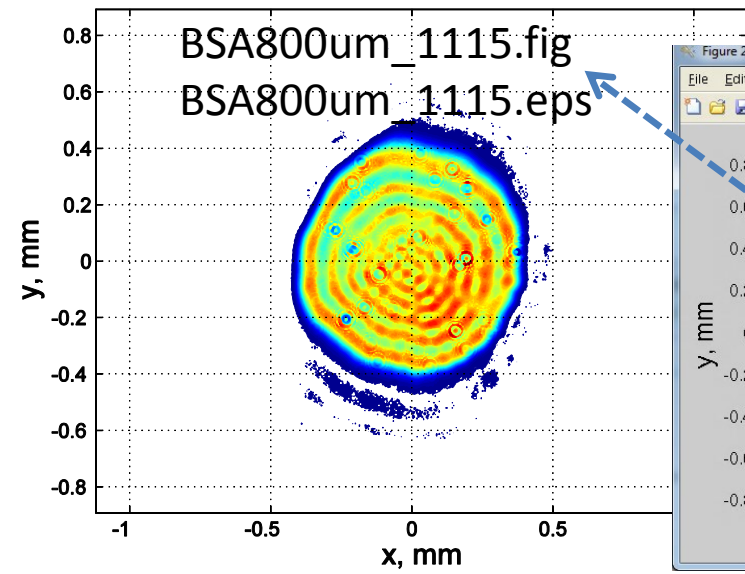
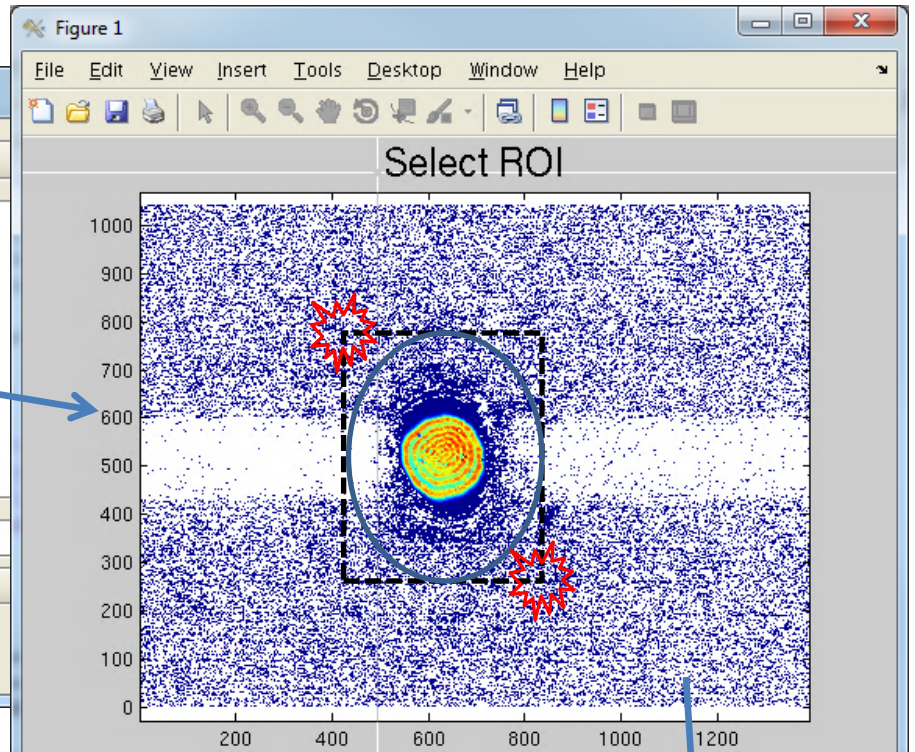
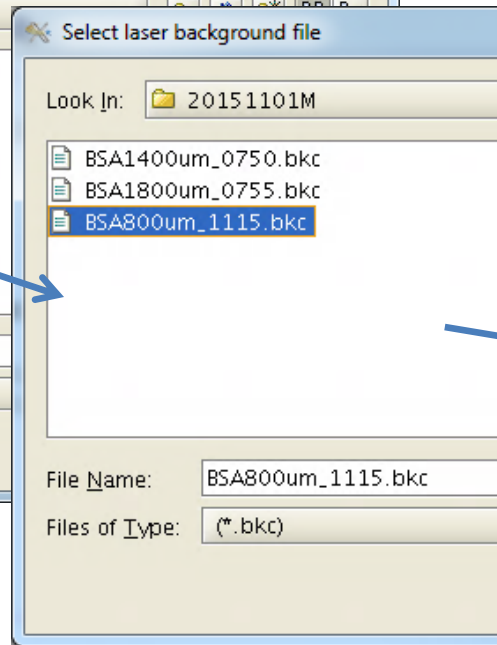
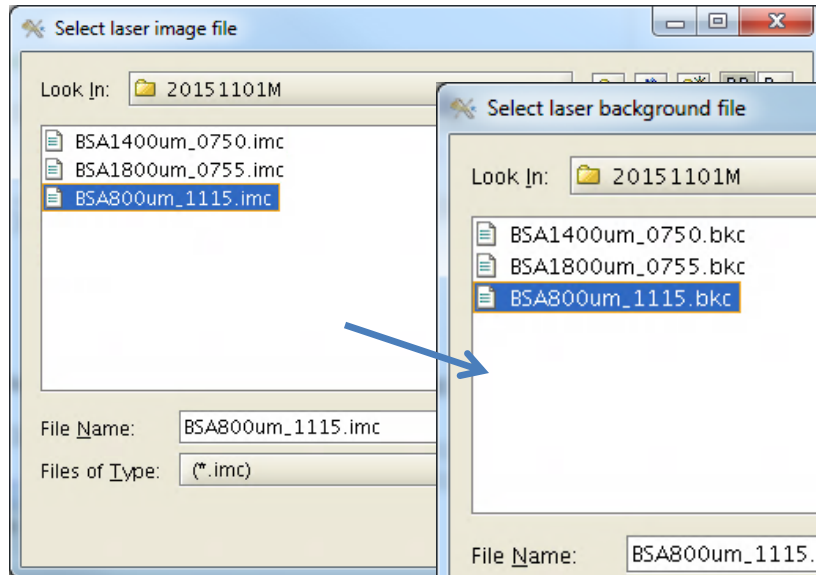
Matlab script for transverse halo generation in ASTRA input file

M. Krasilnikov, 13.11.2015

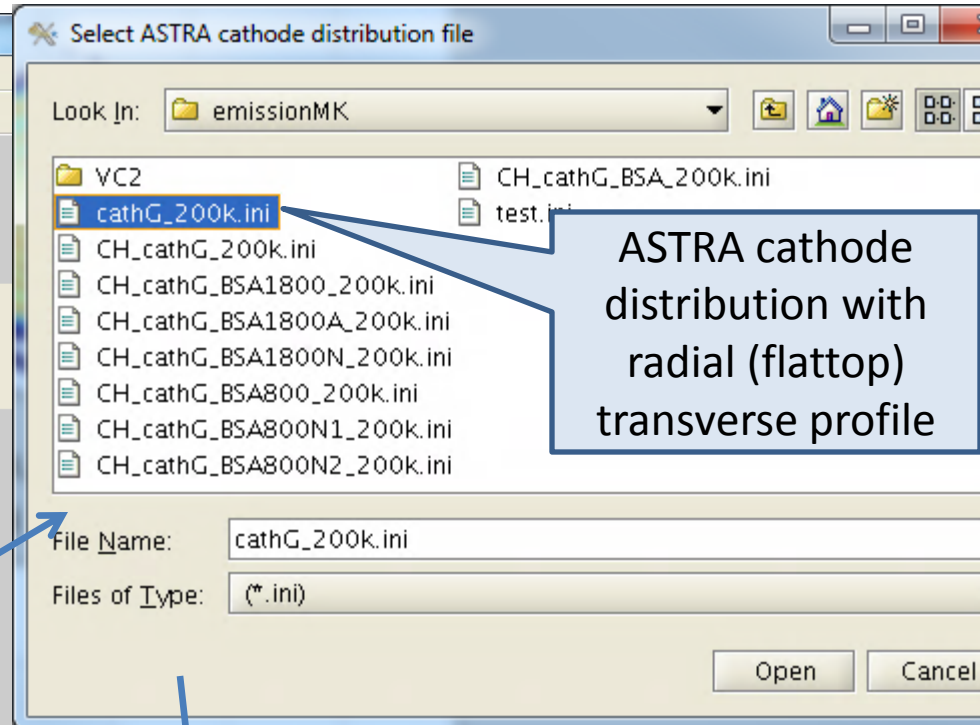
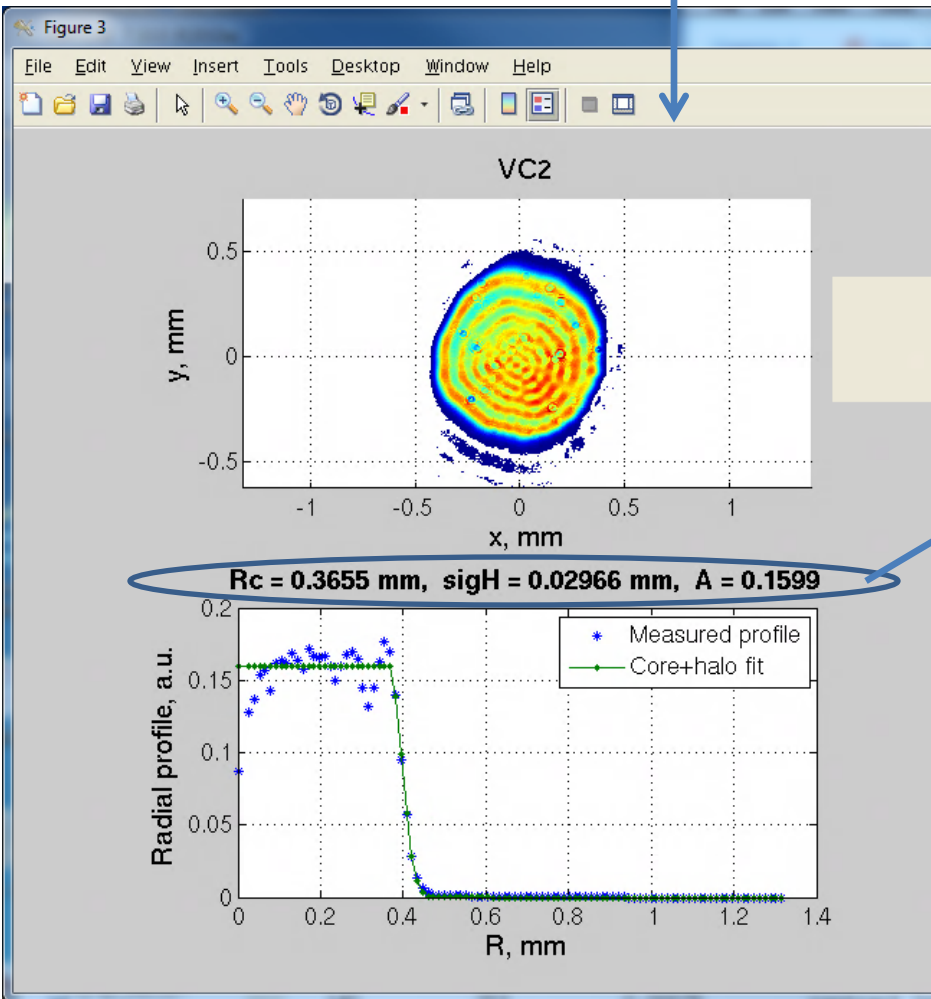
Matlab script CHD_MK.m

- Before start the script you should have:
 - Images from VC2 (.imc and .bkc)
 - ASTRA cathode distribution (.ini) with ideal (radial homogeneous) transverse profile
- What does the script:
 - Loading VC2-image (number of frames-> <Signal>-<Background>)
 - Interactive determination elliptic ROI
 - Core+halo fit → radial profile of the obtained distribution (!Visual check the center position, especially for small BSAs)
Output: Xrms, Yrms, Rc, sigmaH
 - Loading ASTRA particle distribution at the cathode (.ini file), scaling the transverse span to the VC2 image, modification of macroparticle charges of the halo area, save in the new (.ini) file
 - Core+halo fit of the obtained ASTRA distribution

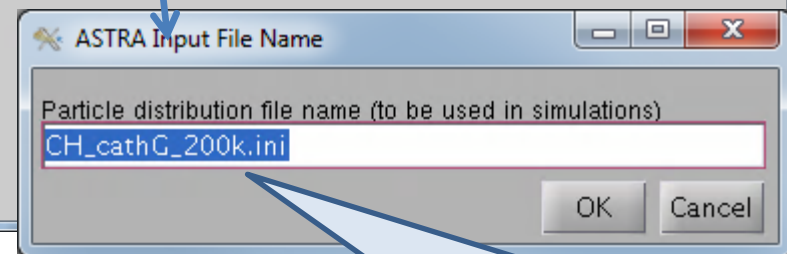
Raw image \rightarrow ROI selection



Core+halo fit of the VC2 profile

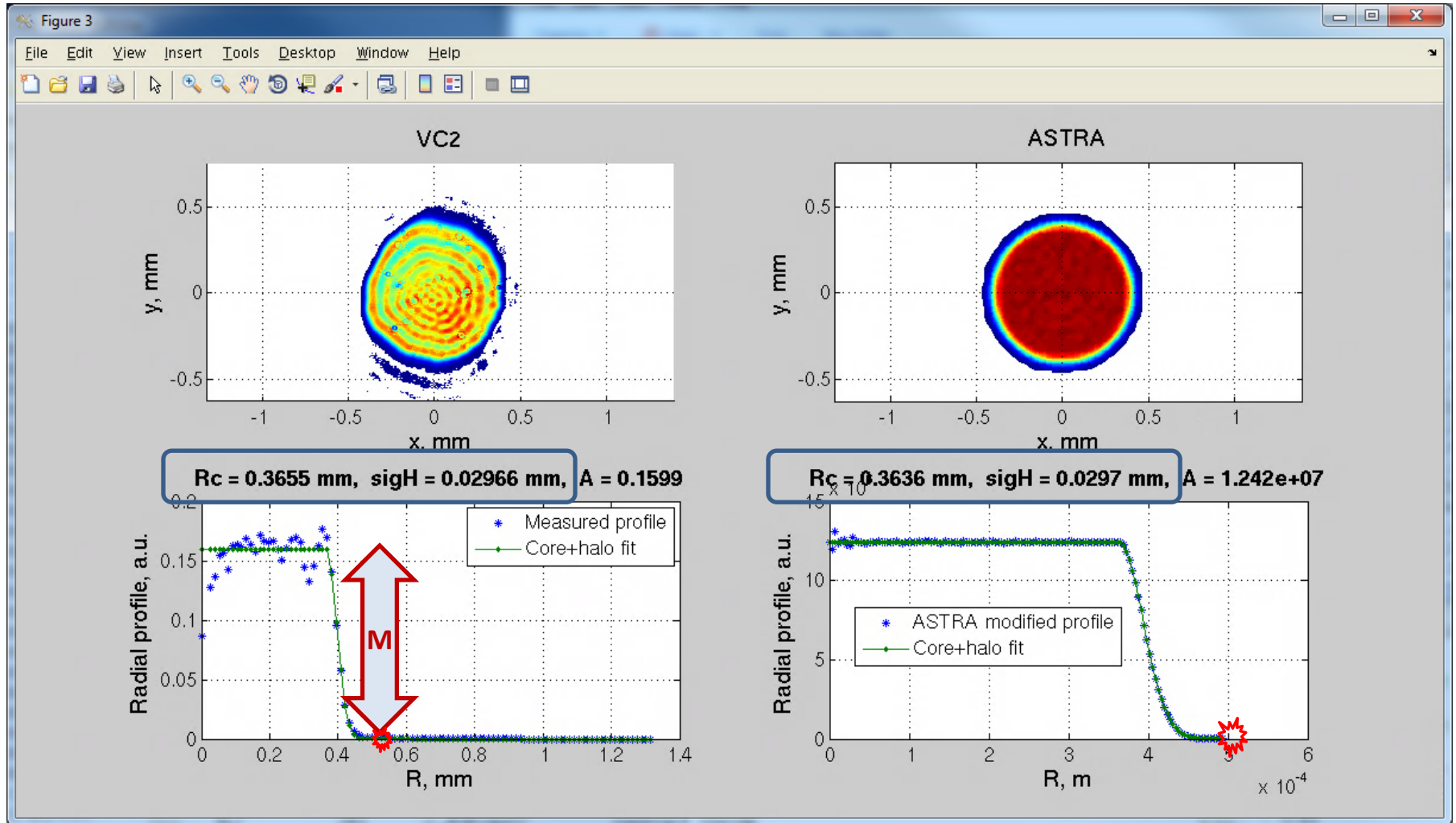


ASTRA cathode distribution with radial (flattop) transverse profile



ASTRA cathode distribution with **modified** radial transverse profile

Core+halo fit of the new ASTRA profile (check)



2 parameters in the head of the script:

$M=10000$; %ratio core amplitude/end of the distribution

$\text{binsize4ASTRA}=0.04$; %bin size in mm for ASTRA distribution plot

Summary and outlook

- Matlab script CHD_MK.m (also you need GetFit.m; GetFitAstra.m; PlotTransvDistr.m) can be used now (running under Linux) → currently located at
...group\pitz\doocs\measure\scripts\SVN\MatlabScripts\CoreHaloGenerators\MK\
...
- Next step → ? 'not flat' core (radial modulations to be implemented. Before → better radial profile algorithm
- All suggestions are welcomed