# Beam Monitor in SHOE

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bm_calibration branch

- Merged in the master branch in 01/2019 (Thanks to Matteo)

- Used as "Testing" branch for the new st-rel, wire displacement evaluation etc..
  (all the old results are obtained with the Genfit algorithm, not available in newgeom)

- "Development" branch for the new reconstruction method based on Legendre polynomy, started before the newgeom branch and stopped for the GSI test.
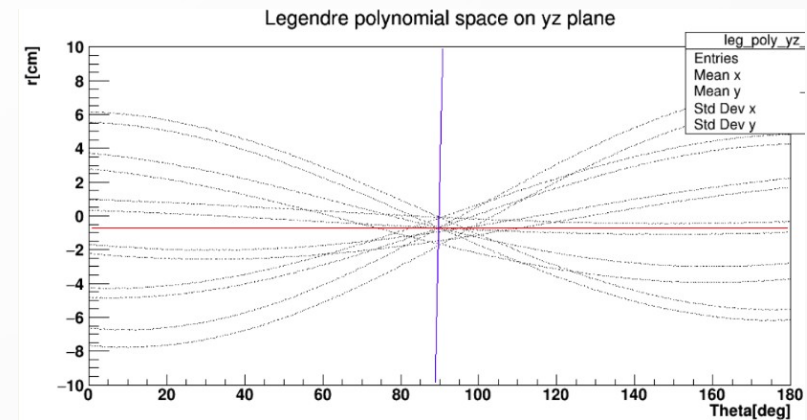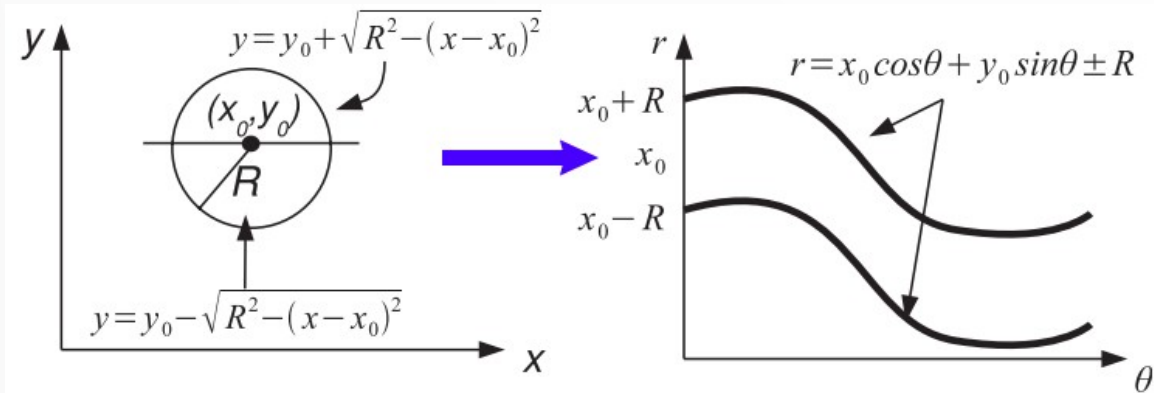
- Once the new reconstruction algorithm will be finished, the import in the newgem branch should be easy (I hope…).

TABM* in newgeom

Current situation

- Works with MC, GSI data and previous BM stand alone tests (with ReadBmRawVME.C)

- No multitrack capability, only the least chi2 method is working

- Input/output files:

  ./config/beammonitor.cfg   --> general config file
  ./geomaps/TABMdetector.map   --> geometry parameters
  ./geomaps/beammonitor_geoch.map   --> wire mapping file
  ./config/T0_beammonitor.cfg   --> T0 time map file (from EvaluateBMT0.C macro, file path in
                                          beammonitor.cfg, will be modified)

  ./config/bmreso_vs_r.root   --> Import the resolution parameters (will be directly written in
                                          the TABMparGeo)

- Reconstruction performances is poor and slow, due to the space-time relations

- The beammonitor.cfg file is commented, but long and not user friendly.

- The Event display is working (very thanks to Christian!), but the visualization of only the BM tracks is not so easy/fast

- BM independent debug level defined in beammonitor.cfg with a number from 0 to 15, from the old code merge. It is not harmonized with the general code debug status (sorry Christian)

TABM* in newgeom

Future development

- Once the Legendre polynomy will be tested in bm_calibration, it will be included also in newgeom

- The beammonitor.cfg file is commented, but it's long and not user friendly:
  If necessary, different parameters can be included in the TABMparCon init function.

- Include the TABMvieTrackFOOT packages also in newgeom to printout pdf with bm tracks

- Space-time relations and the BM anod wire displacements can be evaluated combining the BM and VTX tracks.
  Up to now we are trying to do the same with the BM-MSD stand alone test performed with protons at Trento in March/2019.
  The code that perform this evaluation is an independent macro that works with BM and any external tracking device.

- Fix the BM debug.
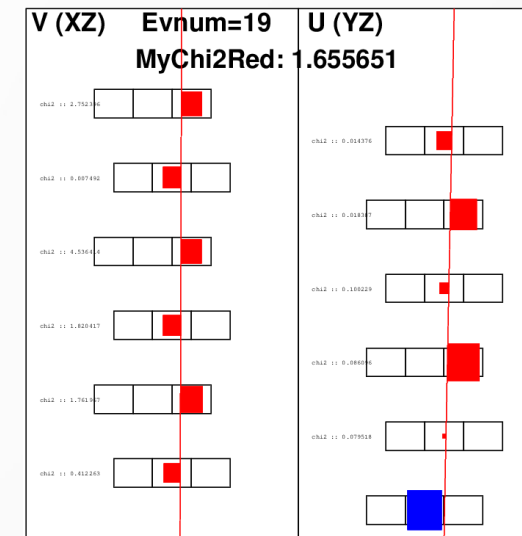
Conclusion

Summary

- Current main BM topics:
  -Legendre polynomy tracking algorithm development in bm_calibration branch
  -Space time relations and BM wire displacement from the BM+MSD test with protons
  -Space time relations from the GSI test with BM+VTX data

- Few improvements to be done in newgeom branch

- bm_calibration does not work with the FOOT general DAQ data.
  Maybe after the Legendre polynomy development it will not be used anymore.

There are other issues/wishes about the TABM* packages in newgeom?