



7 Cell RF and Low B-Field Channel



Chris Rogers,
ASTeC,
Rutherford Appleton
Laboratory
Feb 26, 2013





Two items



- Duplicated Diktys's result of number of cells in RF
- Low B-field cooling channel implemented in ICOOL



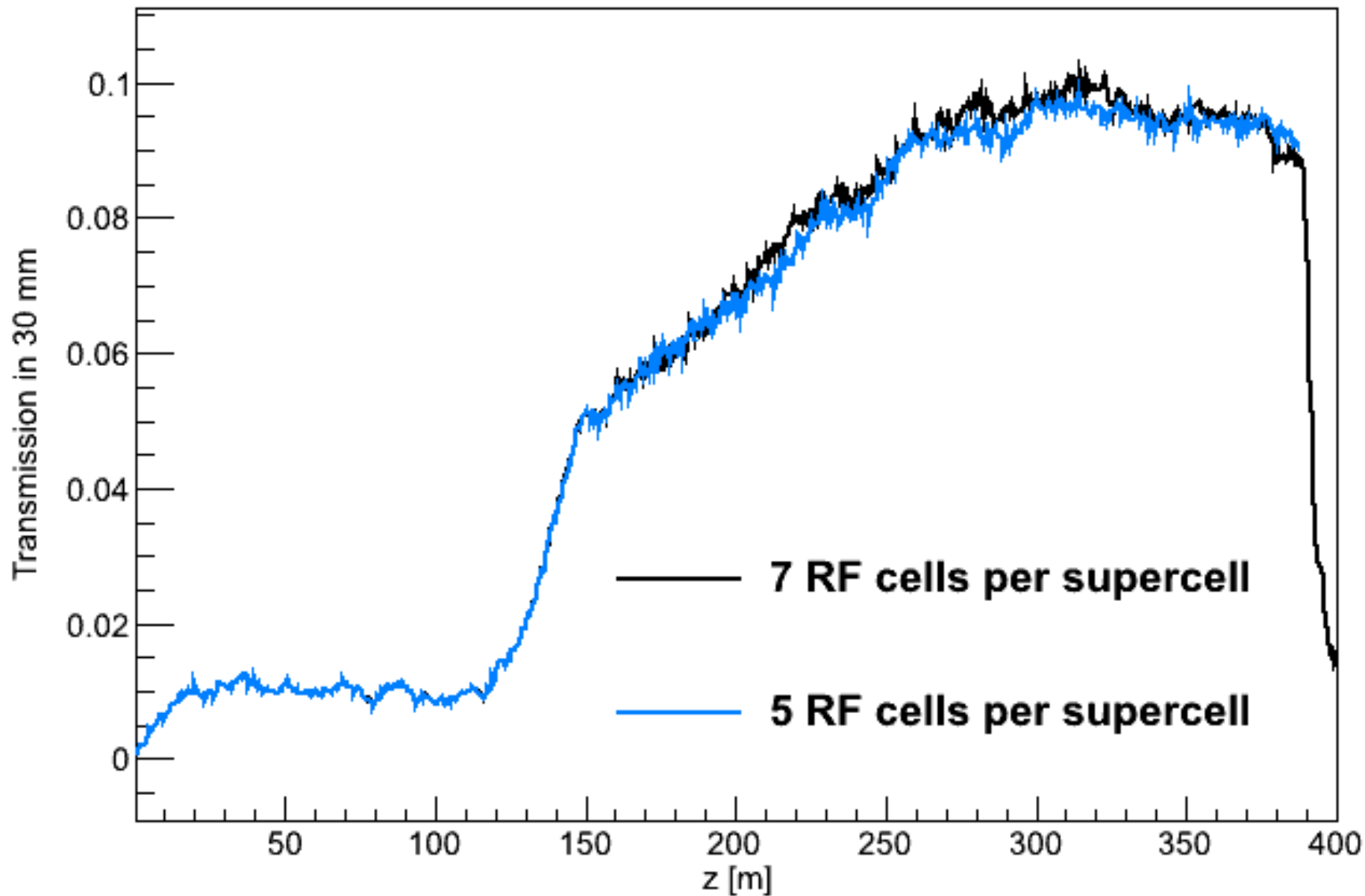
Number of Cells in RF

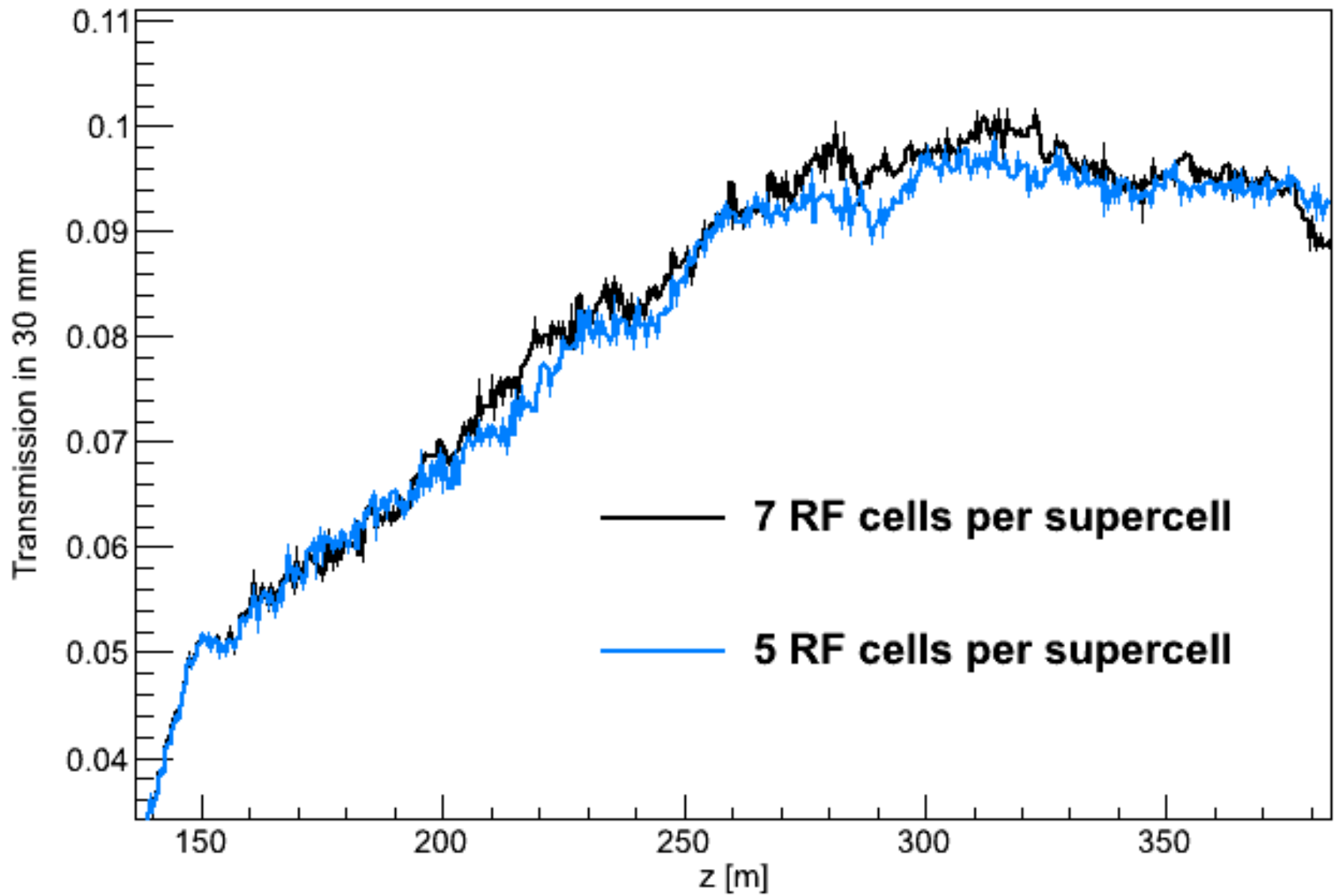


- Discussed 4 weeks ago increasing number of RF cells in cooling channel per gap
 - Diktys simulations indicate marginal increase in muon yield for 7 RF cells per bellows as opposed to 5 RF cells per bellows
 - Neil Collomb (DL Engineering) ambivalent as to whether we have 7 RF cells or 5 RF cells
 - As long as it fits on a crane...
 - We have to worry about alignment tolerances
 - Rogers simulations (below, g4bl only) confirm Diktys result
 - Propose to modify the baseline to include 7 RF cavities



G4BL





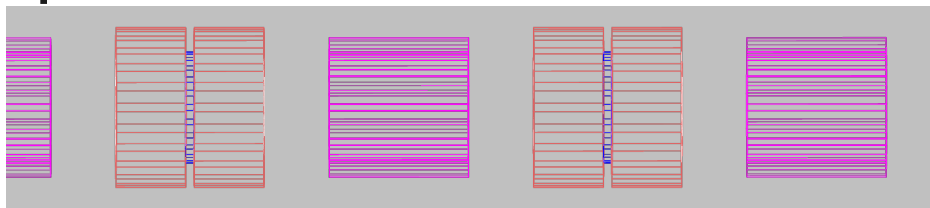


Low B-Field Cooling Channel ICOOOL



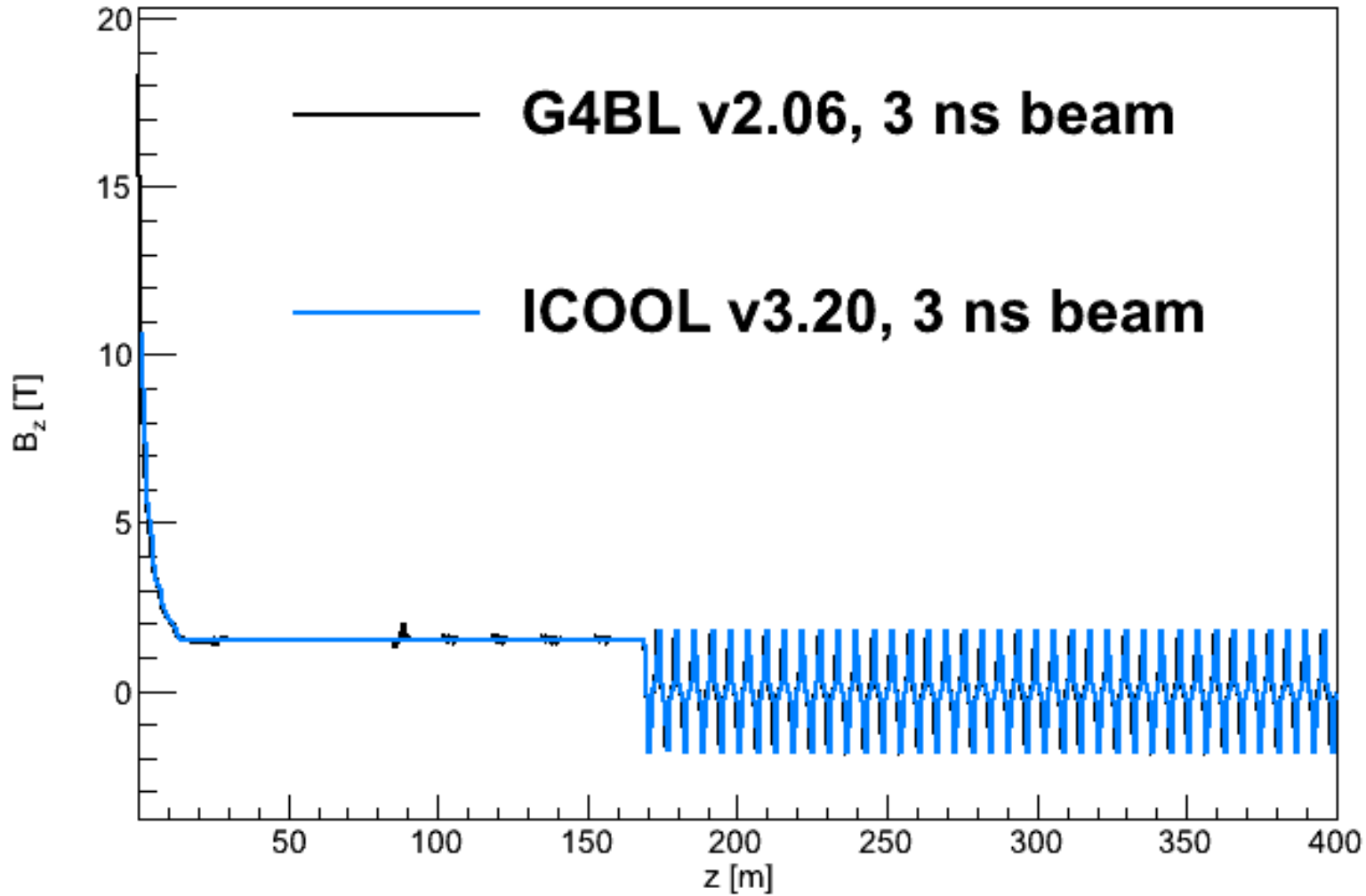
- Diktys requested ICOOOL version of the Low B-Field cooling channel FE lattice
 - Overall field looks good
 - Overall rate looks similar
- Main difference is better aperture control in ICOOOL
 - Leads to lower transverse emittance (scraping)
 - Leads to lower total rate
 - About the same rate in n_1
 - Less noise/better matching
 - Nb: g4bl uses slightly realistic coils; icool uses ideal 1.5 T field

LiH Lattice Schematic

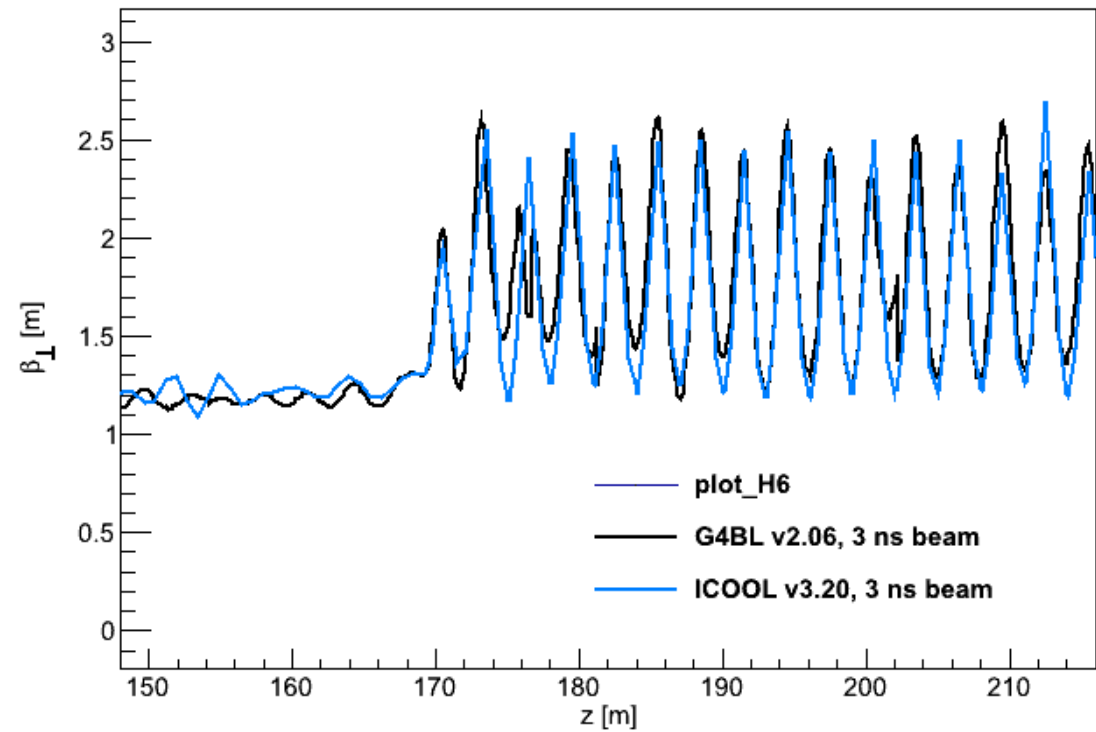
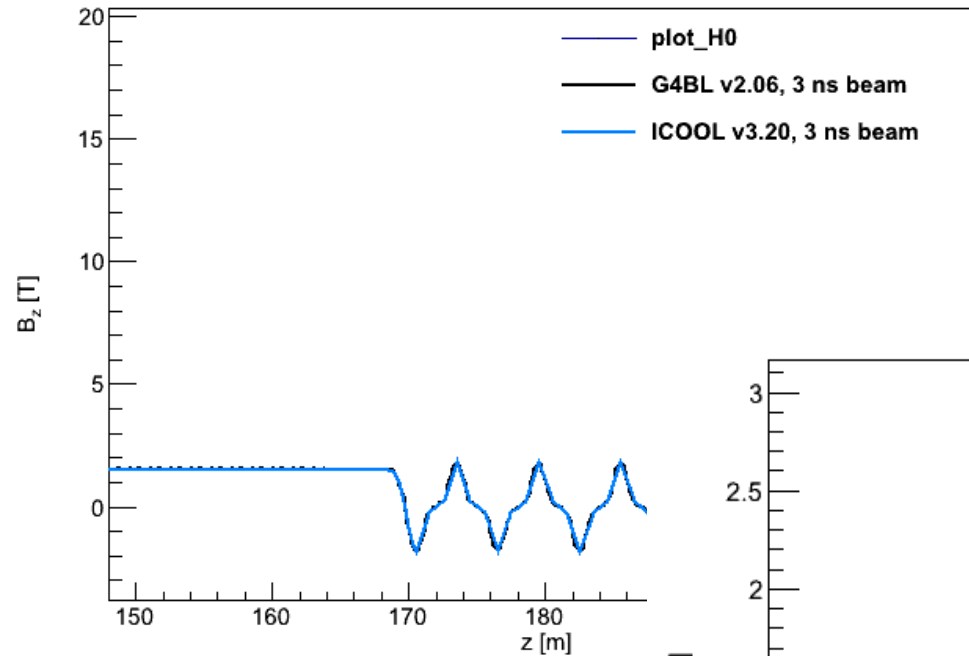


LiH length	46 mm
RF peak field	19 MV/m
RF phase	30 degrees
RF length	500 mm
Be window thickness	0.4 mm
Apertures	400 mm
Coil length	1000 mm
Coil radial thickness	100 mm
Coil inner radius	400 mm
Coil current	19 A/mm ²

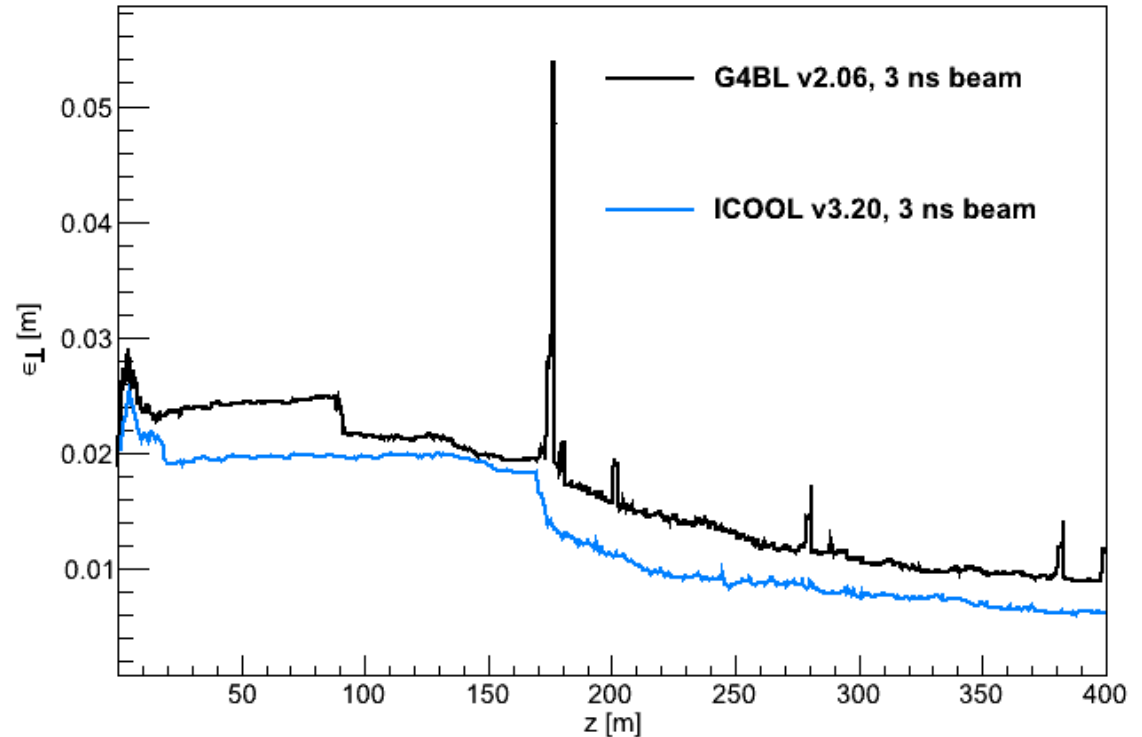
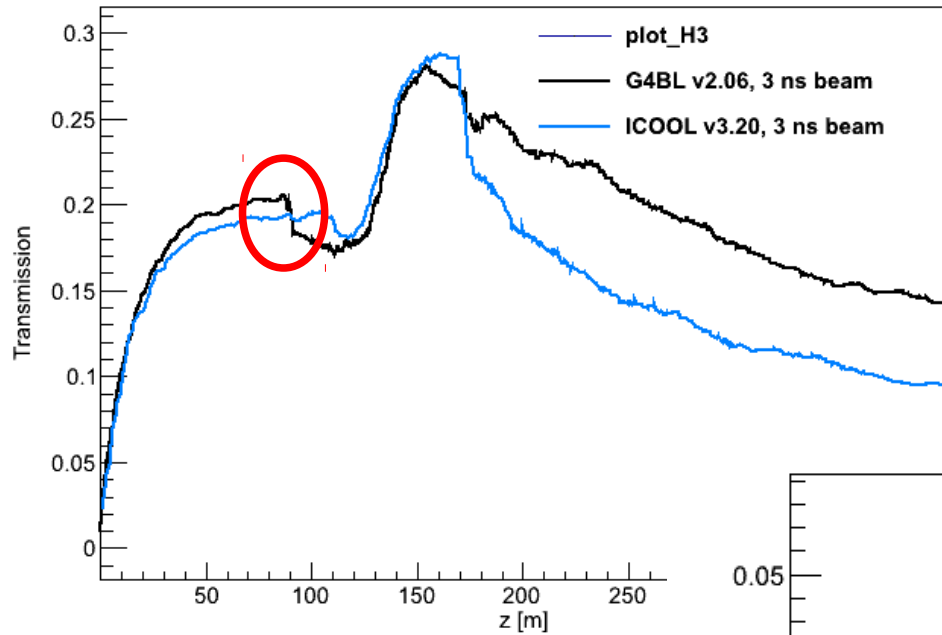
Bz



Bz and beta



Transmission and ϵ_{\perp}



Good muon rate

