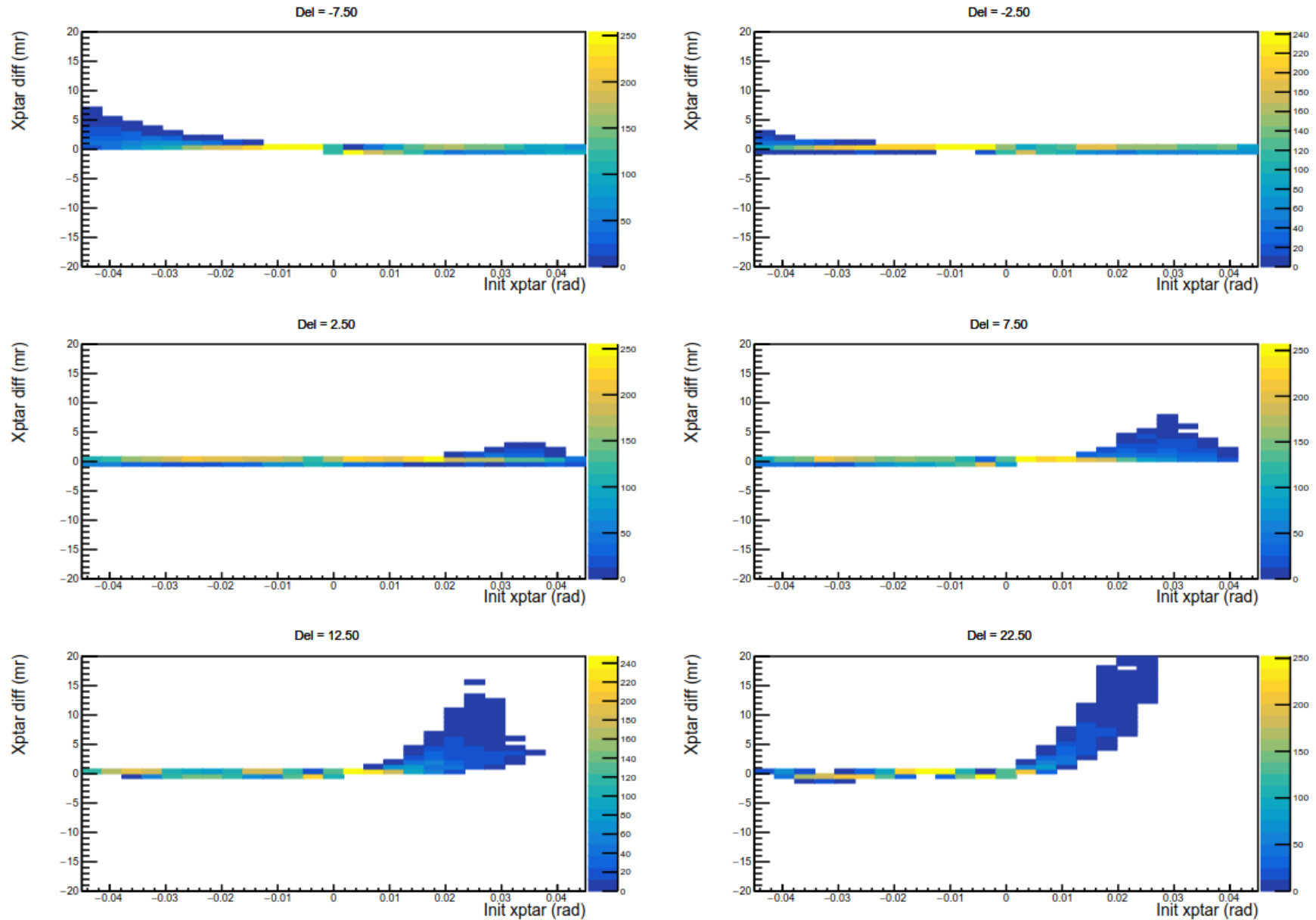


Updates to Hall C MC April 2020

- Modified SHMS optics files in [simc fortran](#) and [mc-single-arm](#) git repositories
 - Problem
 - Abishek saw MC events at +xptar regions in delta > 10 bins that were not in the data
 - Dave Gaskell determined that it was due to bad MC xptar reconstruction in this region.
 - MC using the COSY reconstruction matrix.
 - Solution
 - Use a reconstruction matrix that is fitted to MC data using COSY forward matrix.
 - Additional change was to update the optics forward matrix
 - Aruni had found the quads should be at Q1=1.018, Q2=1.027 and Q3=1.018 to get a best match to data.
 - Default now uses this optics tune and the reconstruction matrix
- Changed the random number generator in simc_gfortran ([Pull request](#))
 - Problem
 - The present Mersenne Twister (mt19377.f) lead to repeated sequence of random events.
 - Solution
 - Switched to CERNLIB RANLUX library.
 - Default behavior of simc_gfortran is still to use the same starting seed for every running of the code
 - To start the different starting seed
 - Set parameter "random_seed" to random seed that you want to use.
 - Set parameter "random_seed" to -1 and the random_seed will be set to time() function.
 - The starting integer sequence is saved to file, so can read-in file to run the code with the same sequence.

Plots with the old MC reconstruction matrix



Plots with the new MC reconstruction matrix

