

GlueX DIRC Commissioning Analyses

A.A

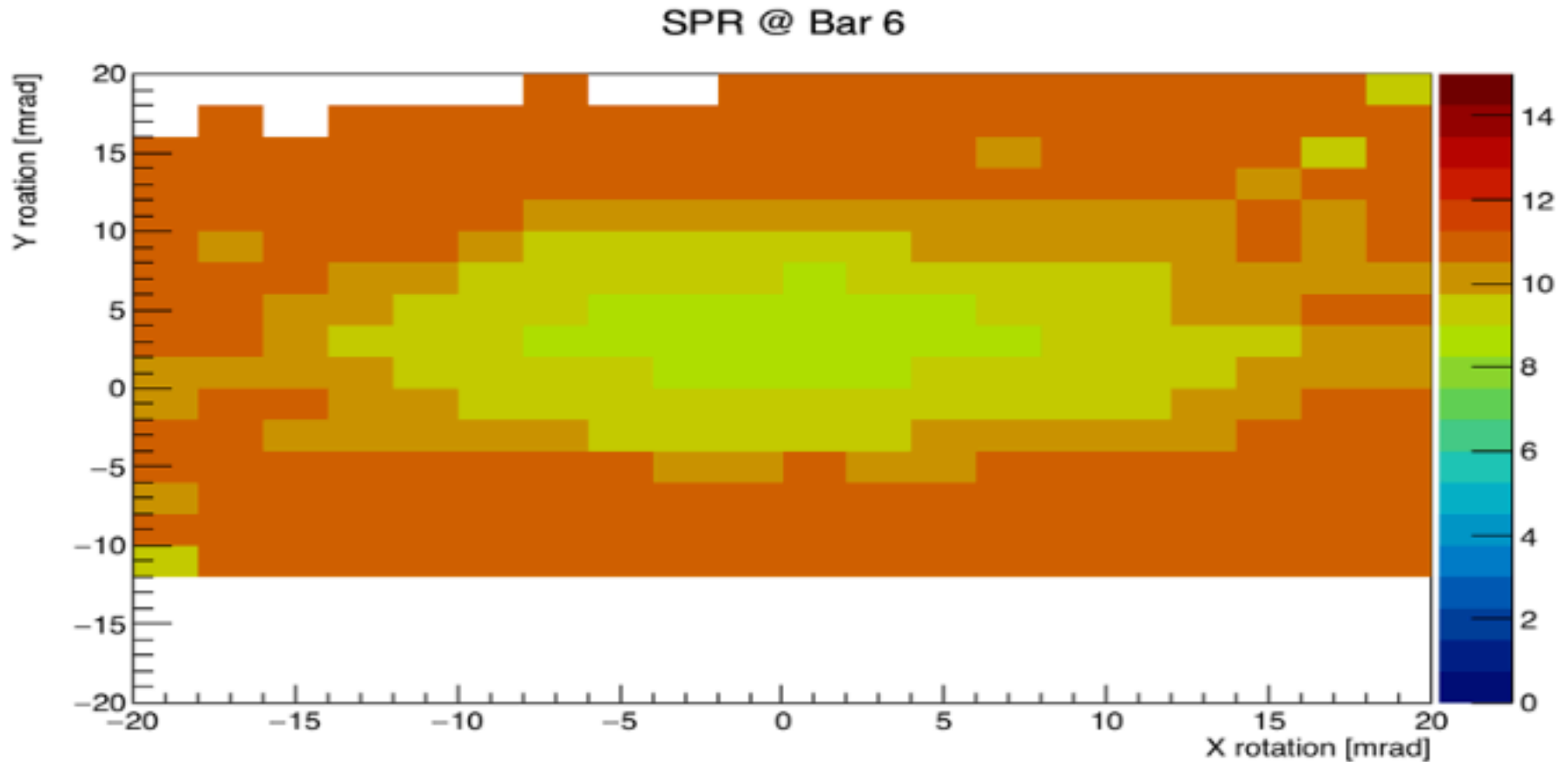
25 Jul 2019

Weekly DIRC Meeting

Outline

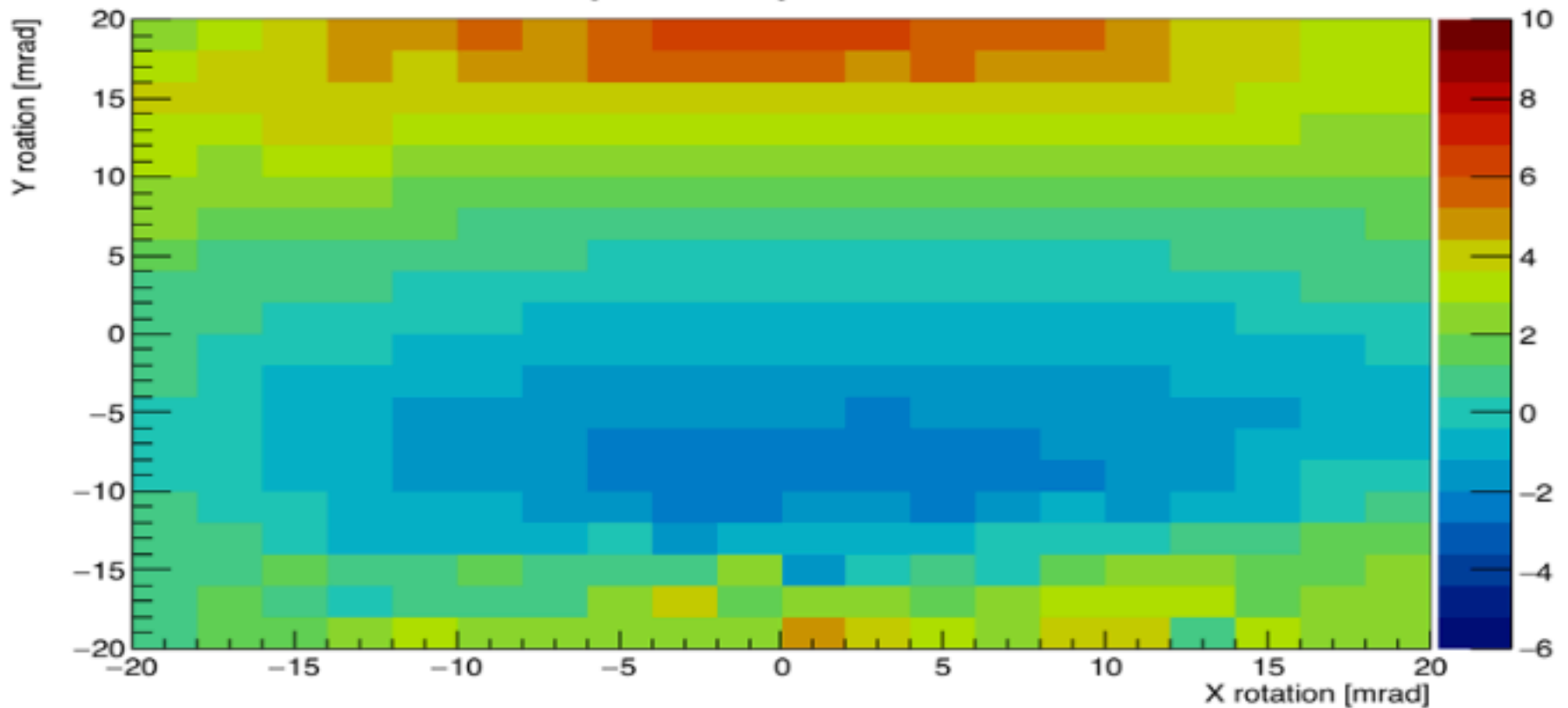
- Momentum Direction Correction (SPR method)
- Survey Correction Comparison (Justin's Survey)
 - Cherenkov Shift (D/R/All)
 - Correlation between photon time and Cherenkov Shift
 - SPR (D/R/All)
 - Correlation between photon time and SPR
- Next Step

Per track SPR



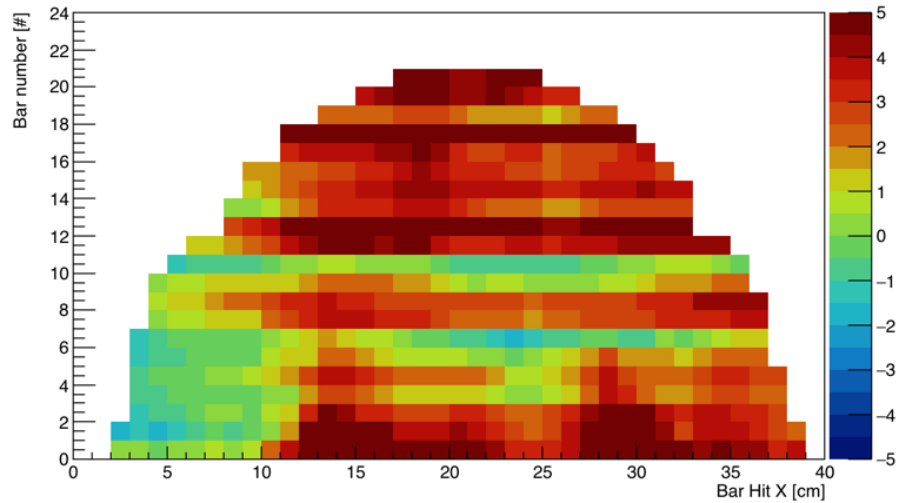
Per track Cherenkov Shift

Mean Value of $\theta_c^{\text{Measured}} - \theta_c^{\text{Expected}}$ distribution @ Bar 6



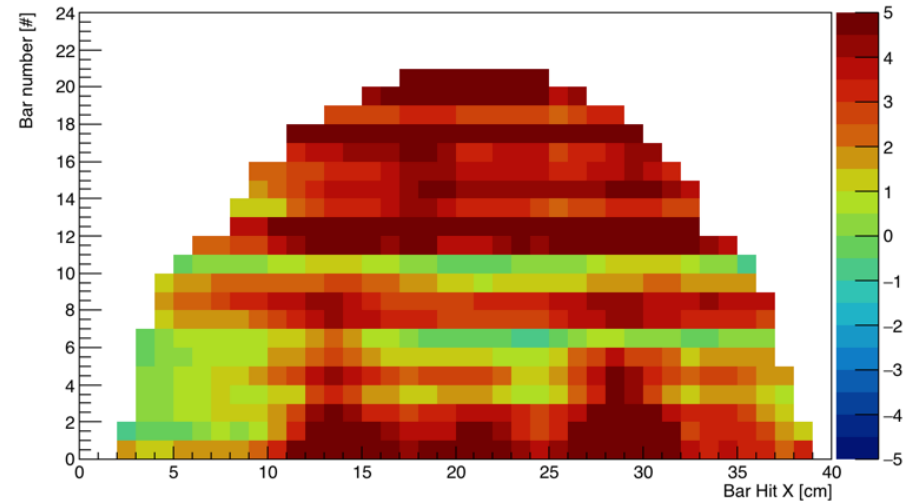
Shift Survey Correction Study

θ_c Shift [mrad]



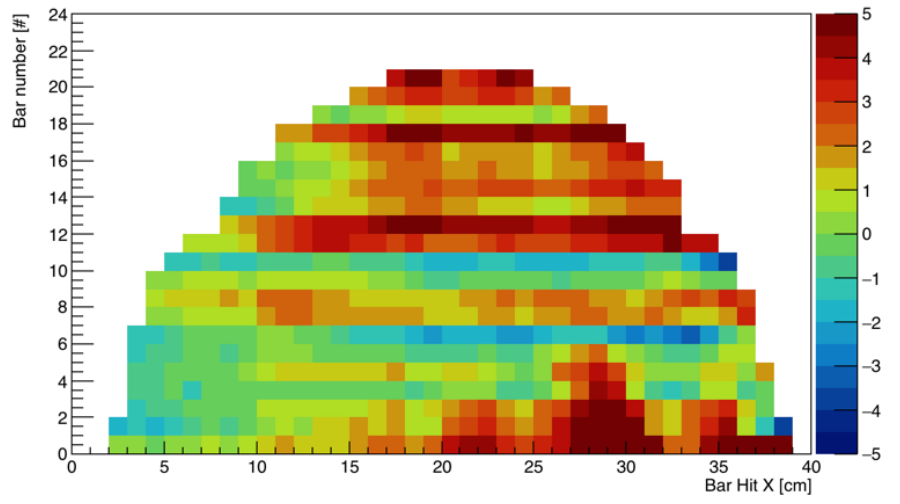
without correction

θ_c Shift [mrad]

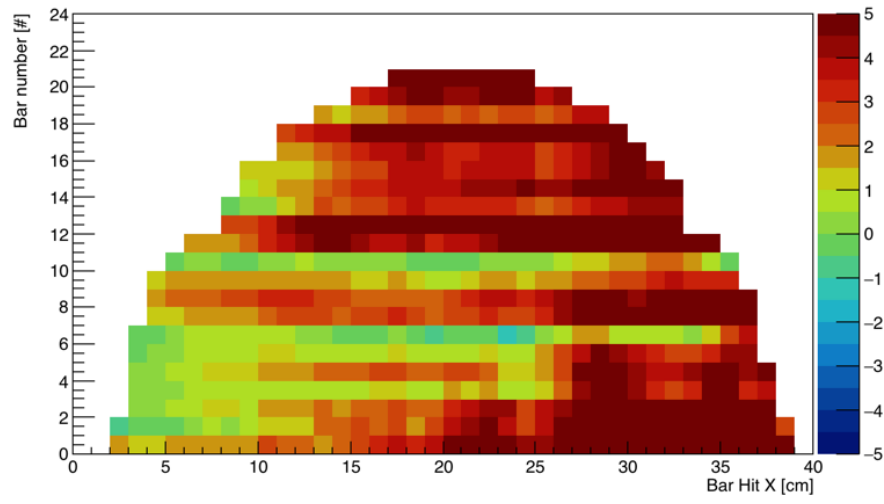


survey correction

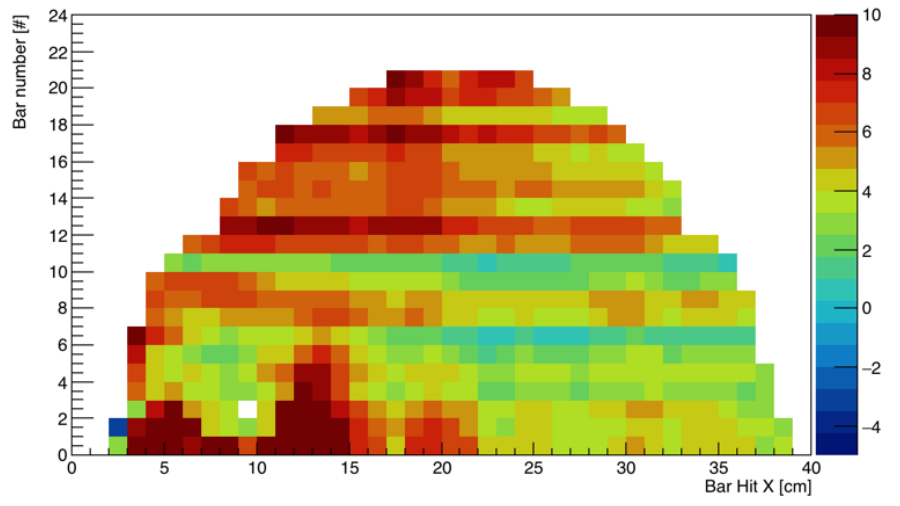
θ_c Shift Direct Photons [mrad]



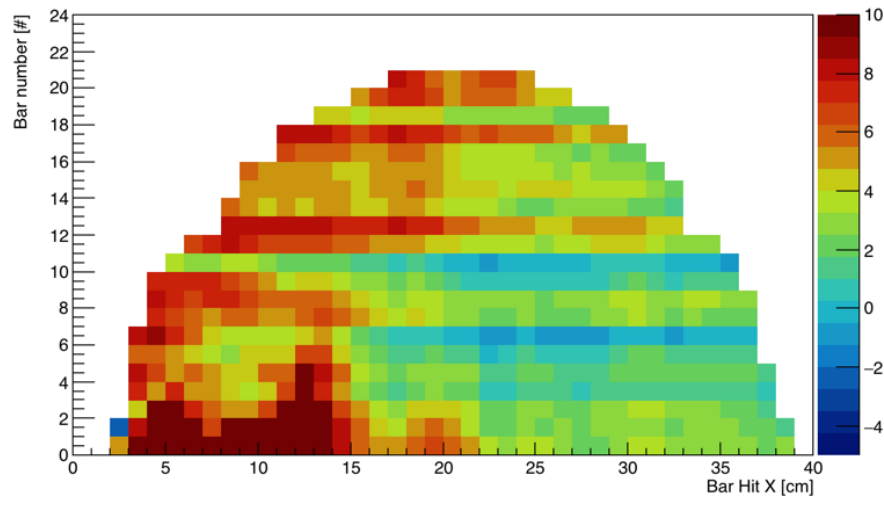
θ_c Shift Direct Photons [mrad]



θ_c Shift Reflected Photons [mrad]



θ_c Shift Reflected Photons [mrad]

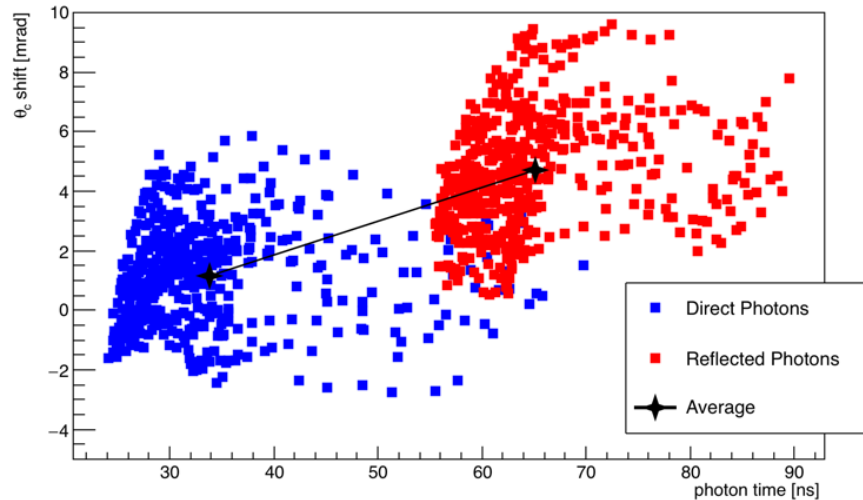


without correction

survey correction

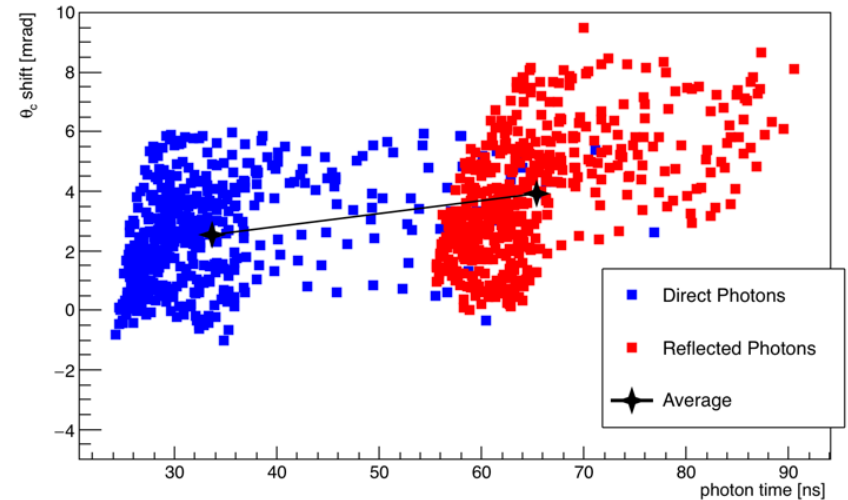
Cherenkov Shift vs photon time

correlation between cherenkove shift and photon time



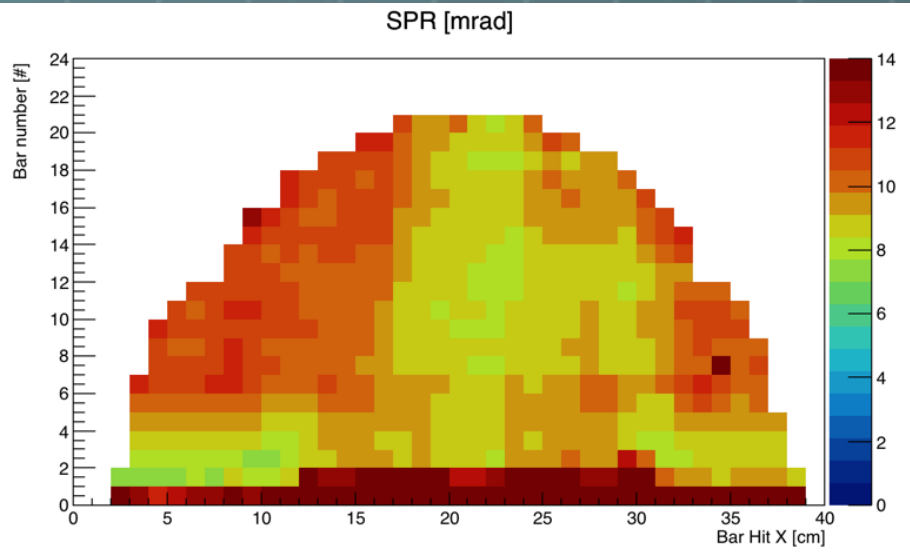
without correction

correlation between cherenkove shift and photon time

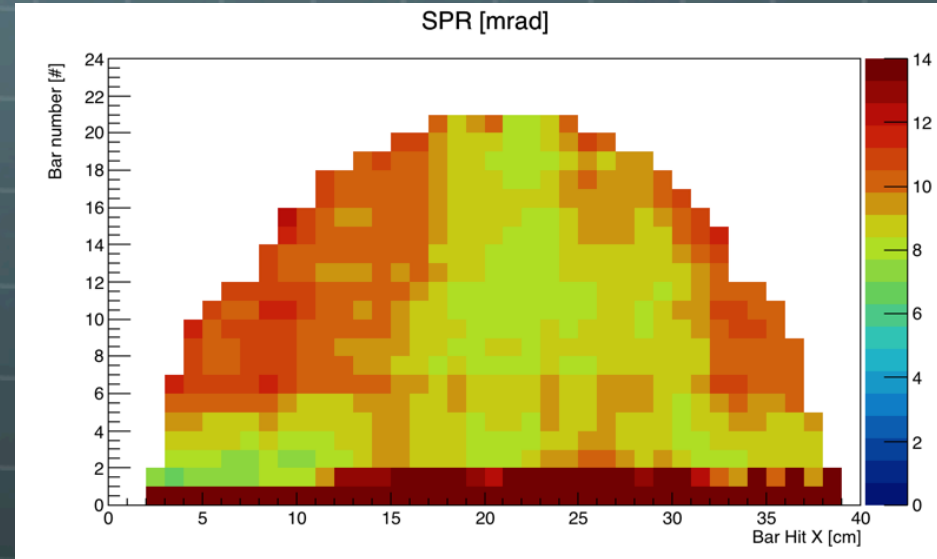


survey correction

SPR Survey Correction Study

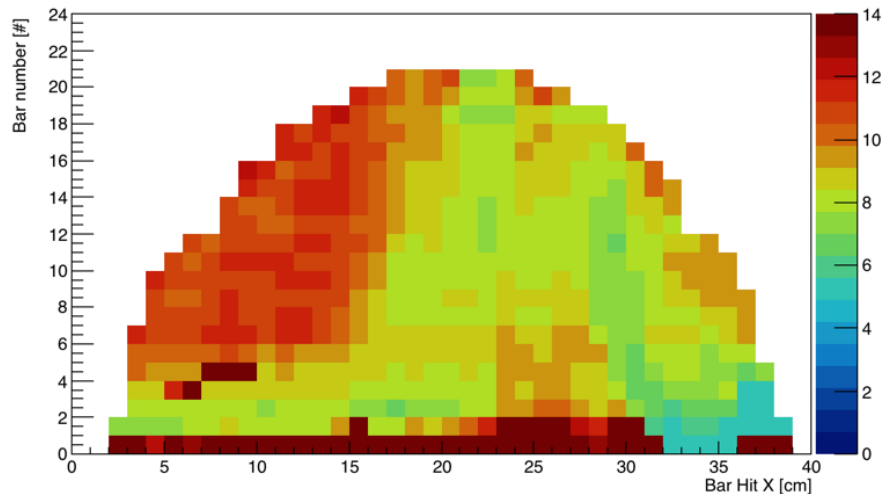


without correction

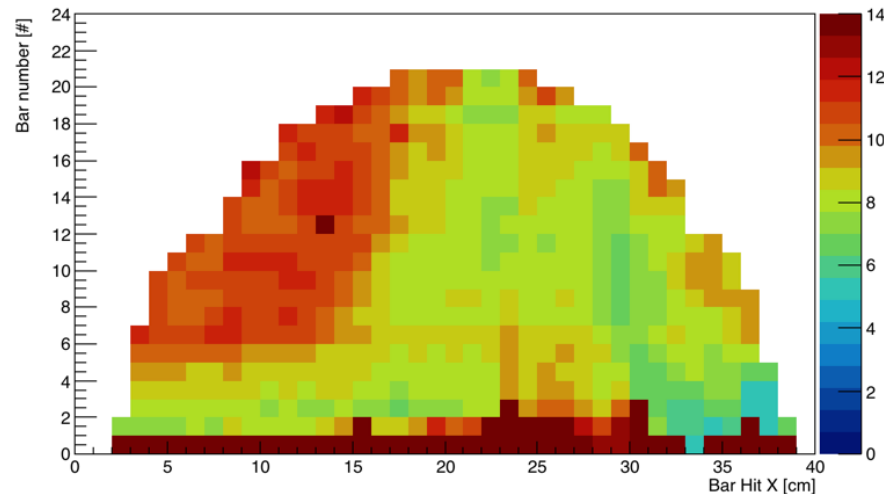


survey correction

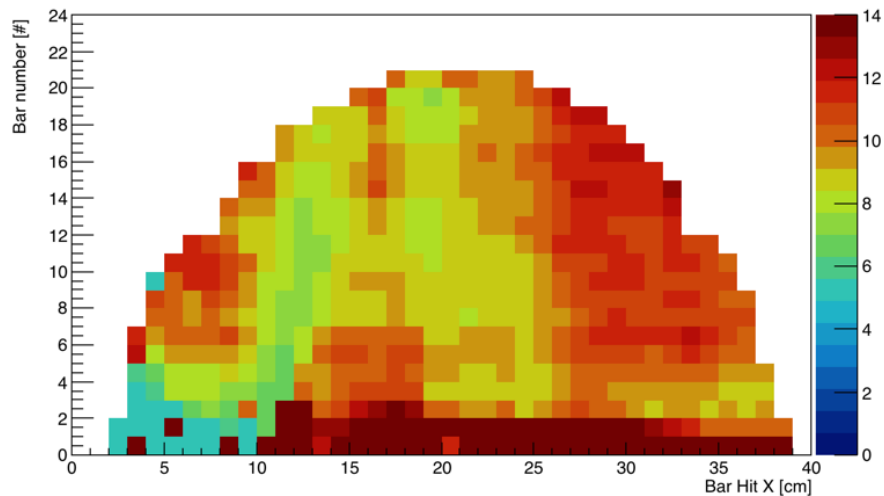
SPR Direct Photons [mrad]



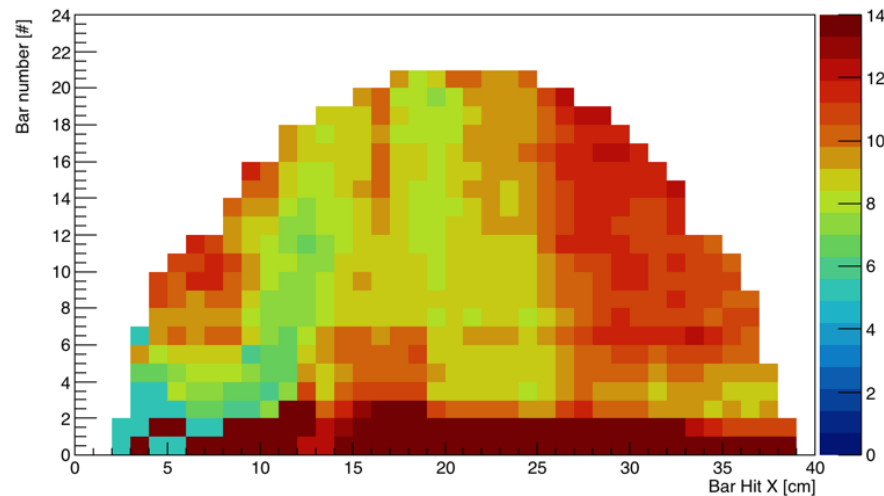
SPR Direct Photons [mrad]



SPR Reflected Photons [mrad]



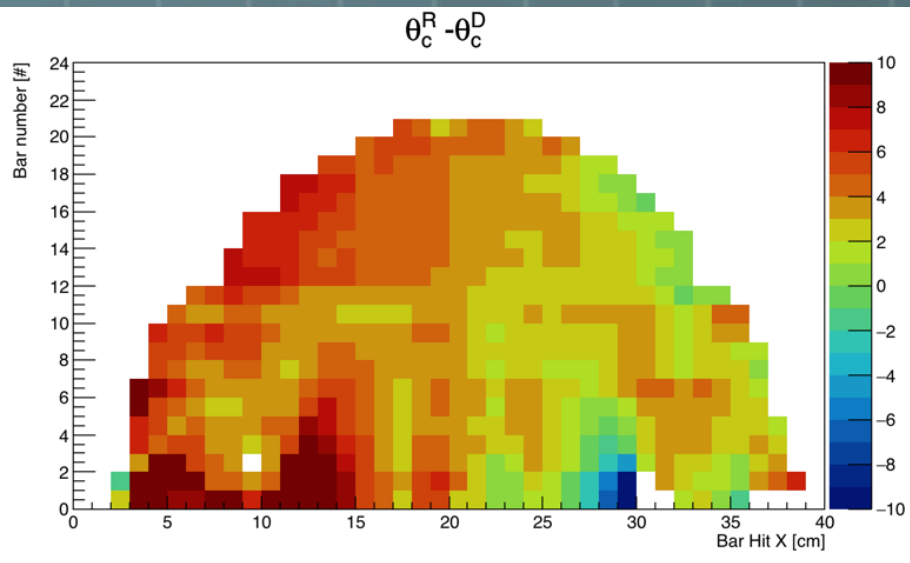
SPR Reflected Photons [mrad]



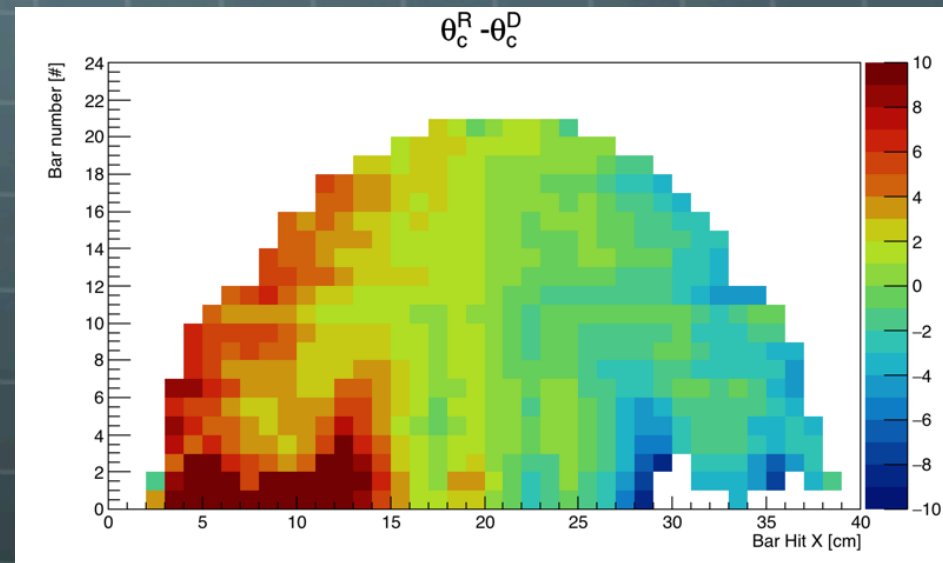
without correction

survey correction

Cherenkov Reflected - Direct



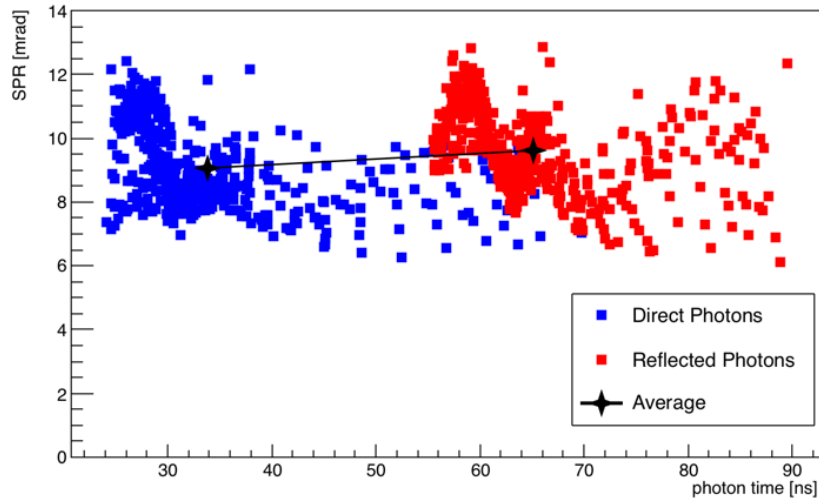
without correction



survey correction

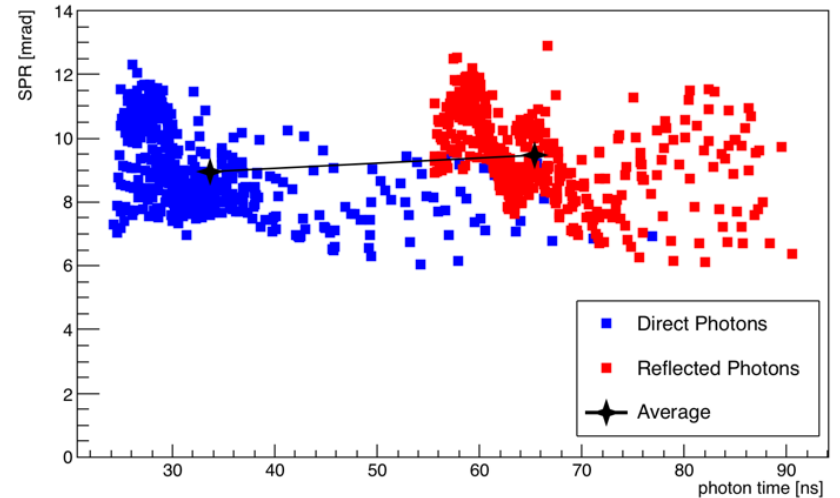
SPR & Photon Time

correlation between SPR and photon time



without correction

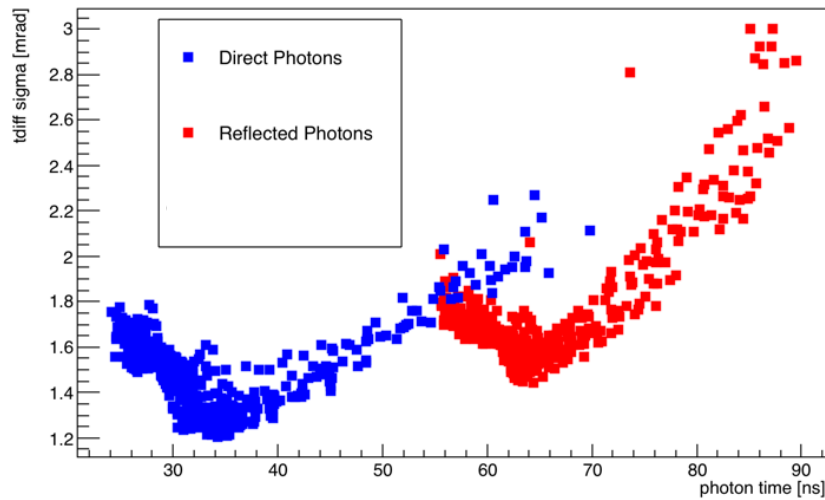
correlation between SPR and photon time



survey correction

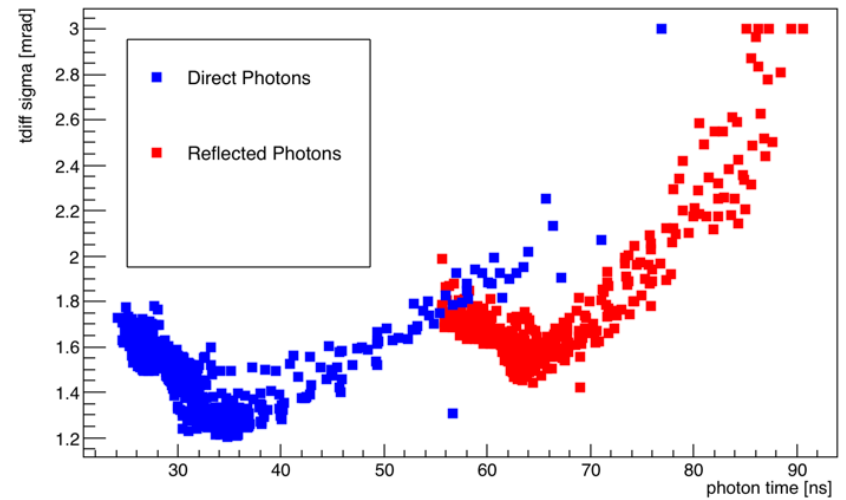
Time Difference Sigma vs Photon Time

correlation between tdiff sigma and photon time



without correction

correlation between tdiff sigma and photon time



survey correction

Momentum Direction Correction

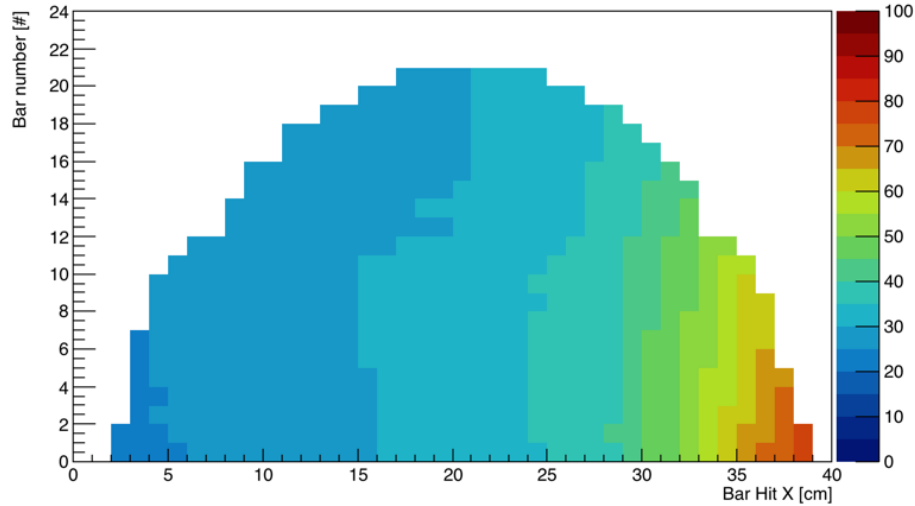
Next Step

- 🌐 Apply Momentum Direction Correction
- 🌐 Apply Cherenkov angle Correction [per Bar per X bin per Direct/Reflected flag] since no correlation between the shift neither (yield nor SPR nor momentum)
- 🌐 Calculate Separation power
- 🌐 Calculate Tracking Resolution Map

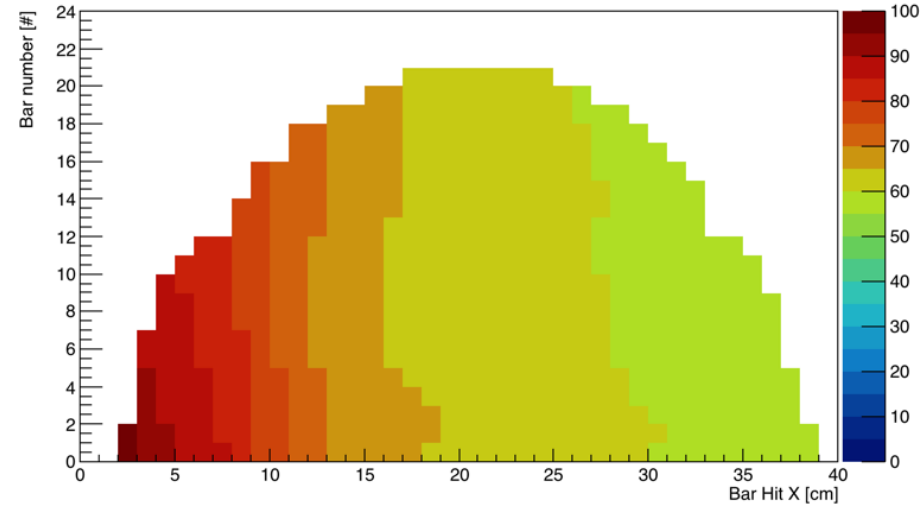
Backup Slides

Photon Time

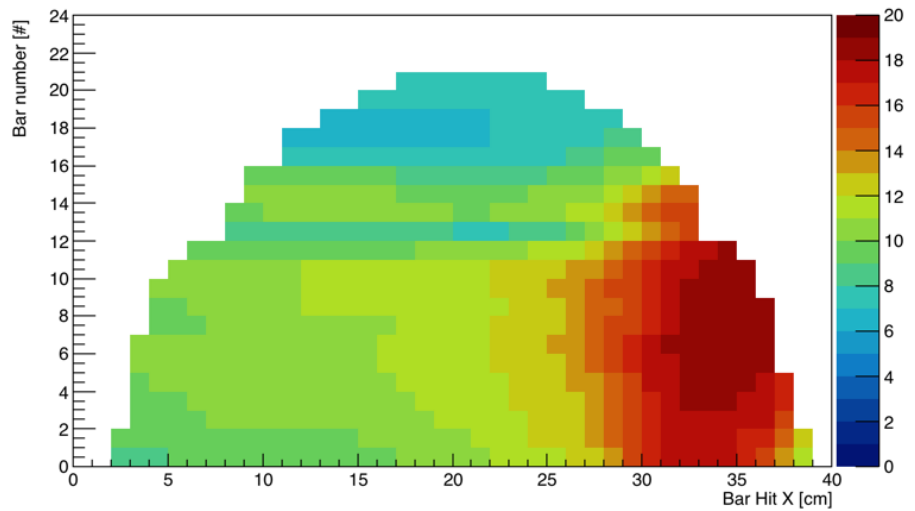
Time Spectrum Mean Direct Photons [ns]



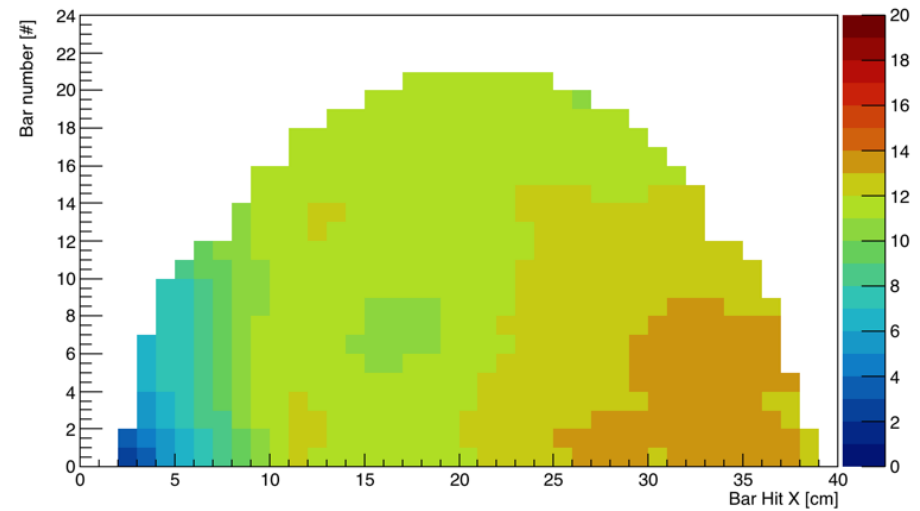
Time Spectrum Mean Reflected Photons [ns]



Time Spectrum RMS Direct Photons [ns]



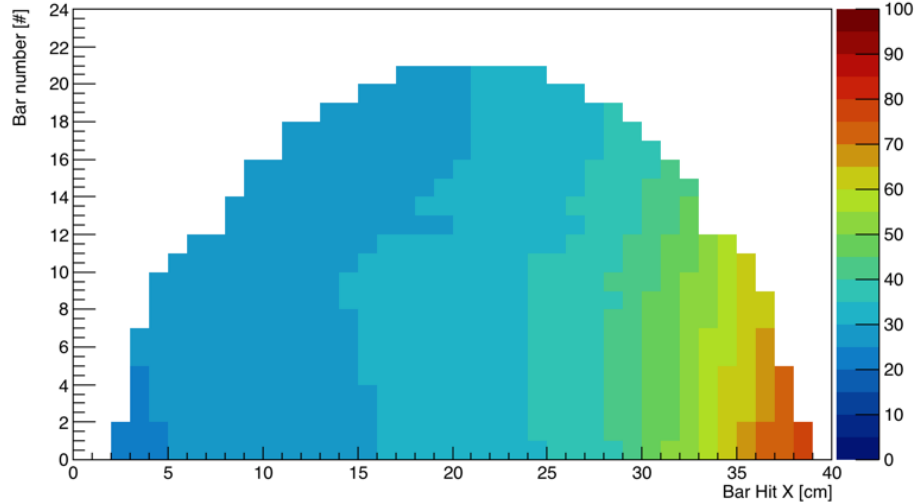
Time Spectrum RMS Reflected Photons [ns]



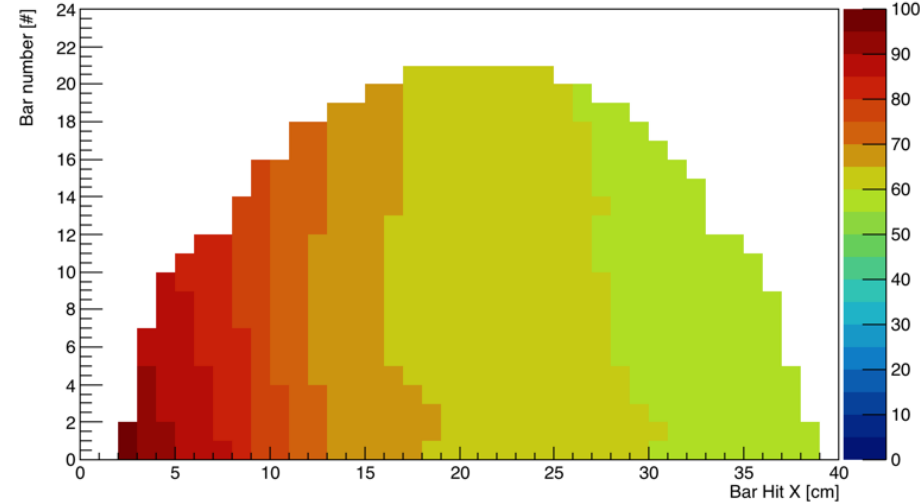
without correction

Photon Time

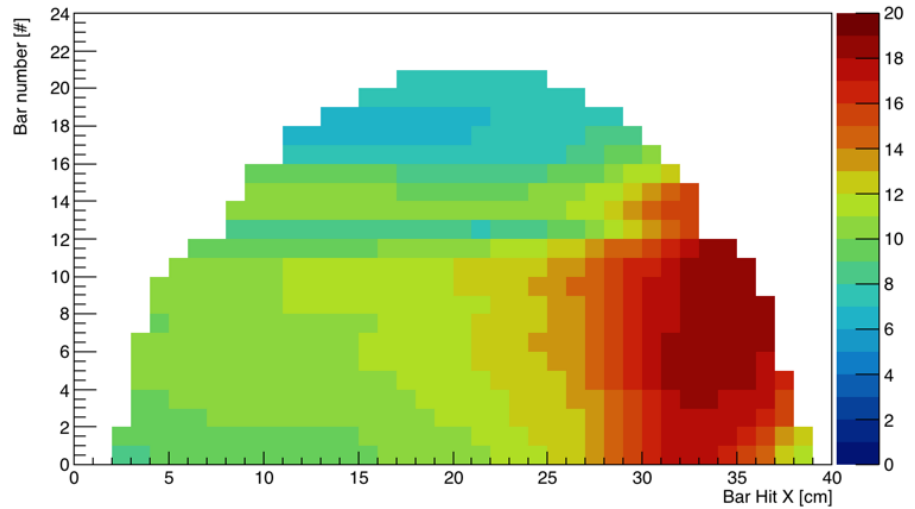
Time Spectrum Mean Direct Photons [ns]



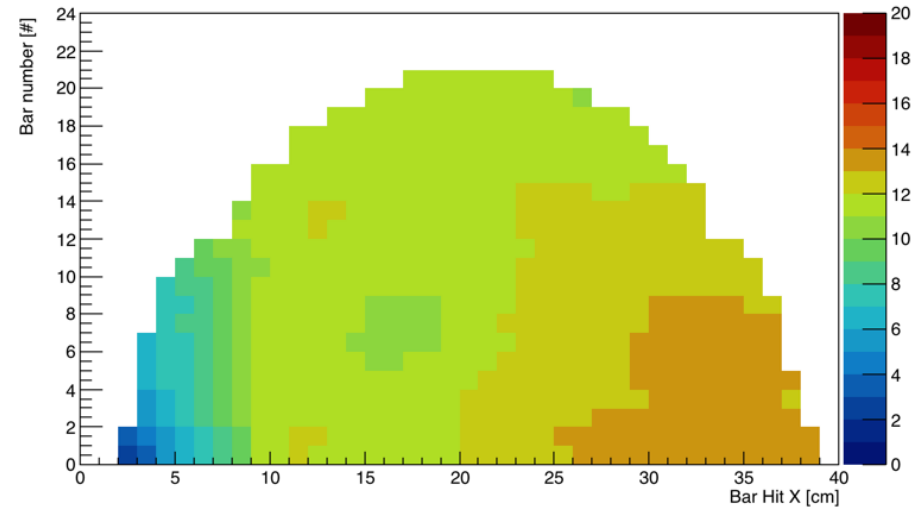
Time Spectrum Mean Reflected Photons [ns]



Time Spectrum RMS Direct Photons [ns]



Time Spectrum RMS Reflected Photons [ns]



Survey correction