

# TR from complex radiators

---

Ivan Zhutikov



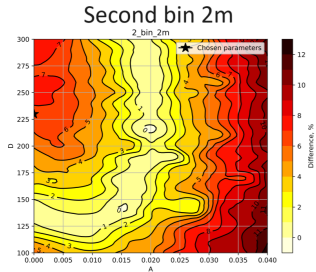
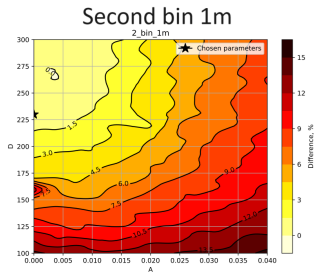
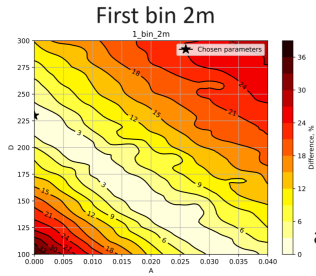
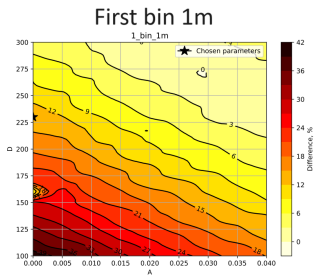
August 6, 2024

# The discrepancy in TR spectra

To investigate how data can be reconciled with MC using diffusion, two types of diffusion were considered without shift  $\sigma_0 = A \cdot E^{1.7} + 2.4$  and with shift  $\sigma_0 = A \cdot (E - 15\text{keV})^{1.7} + 2.4$ . In order to select the most suitable diffusion parameters, A and D ( $\sigma = \sqrt{2Dt_{\text{drift}}}$ ) were varied between  $A \in [0; 0.04]$  with step 0.004 and  $D \in [100; 300]$  with step 10.

For each simulation, the distribution of photons by the number of pixels was taken and the  $\Delta = \frac{|(N_i^{\text{Data}} - N_i^{\text{MC}})|}{N_i^{\text{Data}}}$  was calculated for every bin in histogram.

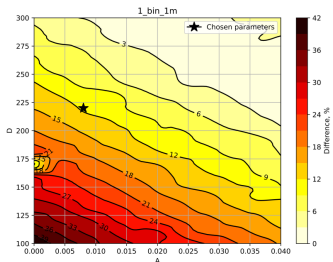
# Results for diffusion without shift



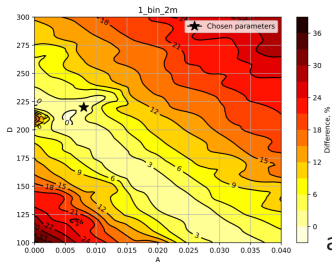
Best agreement for  
 $A = 0$   
 $D = 230$

# Results for diffusion with shift

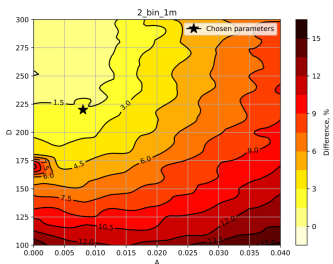
## First bin 1m



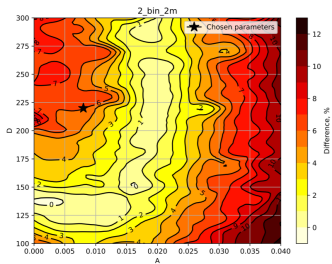
## First bin 2m



## Second bin 1m



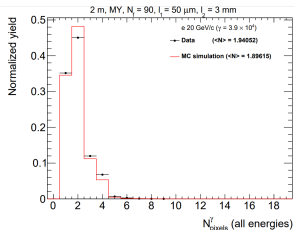
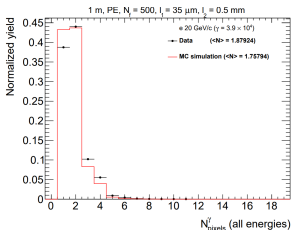
## Second bin 2m



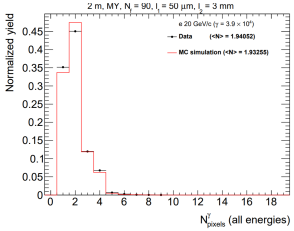
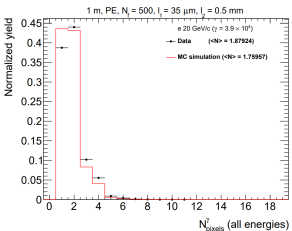
best  
agreement  
for  
 $A = 0.008$   
 $D = 220$

# Distributions by pixels for diffusions with or w/o shift

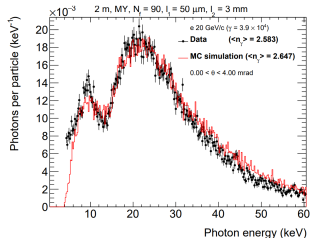
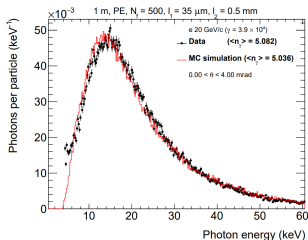
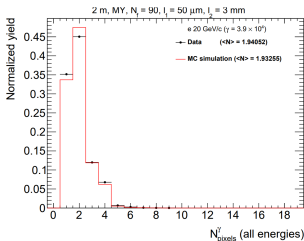
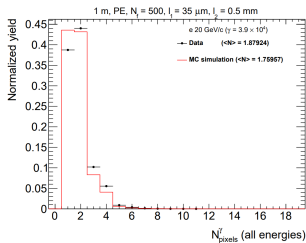
Old without shift



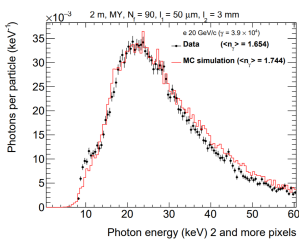
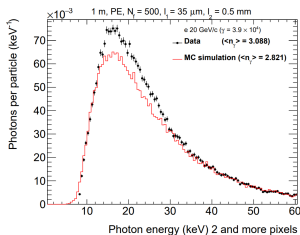
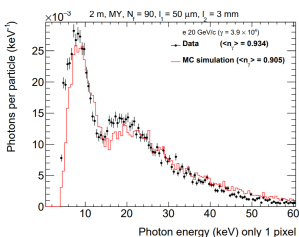
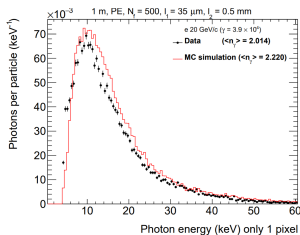
New with shift



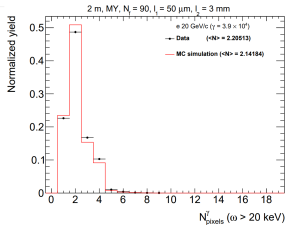
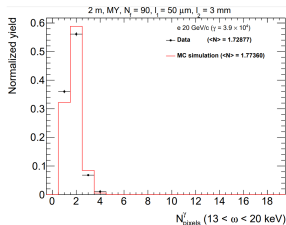
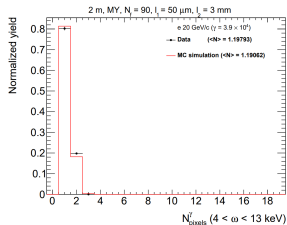
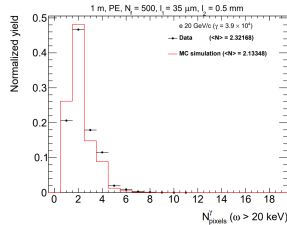
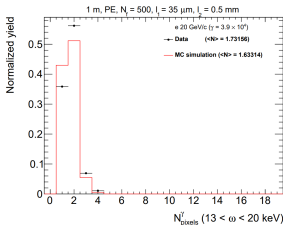
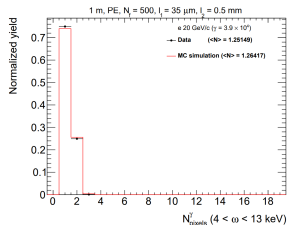
# Spectra for TR photons for diffusions with shift



# Spectra for 1 and 2 or more pixels



# Distributions by pixels for different regions





THANKS!