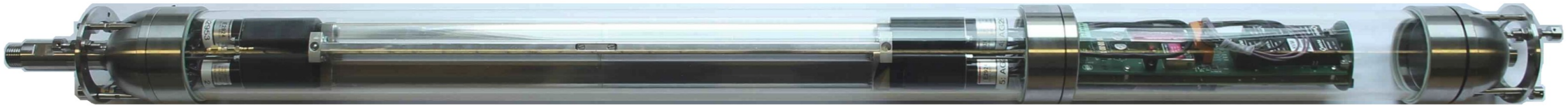


# Measurement with the UV Calibration Device 2019/20

ICRC 2021



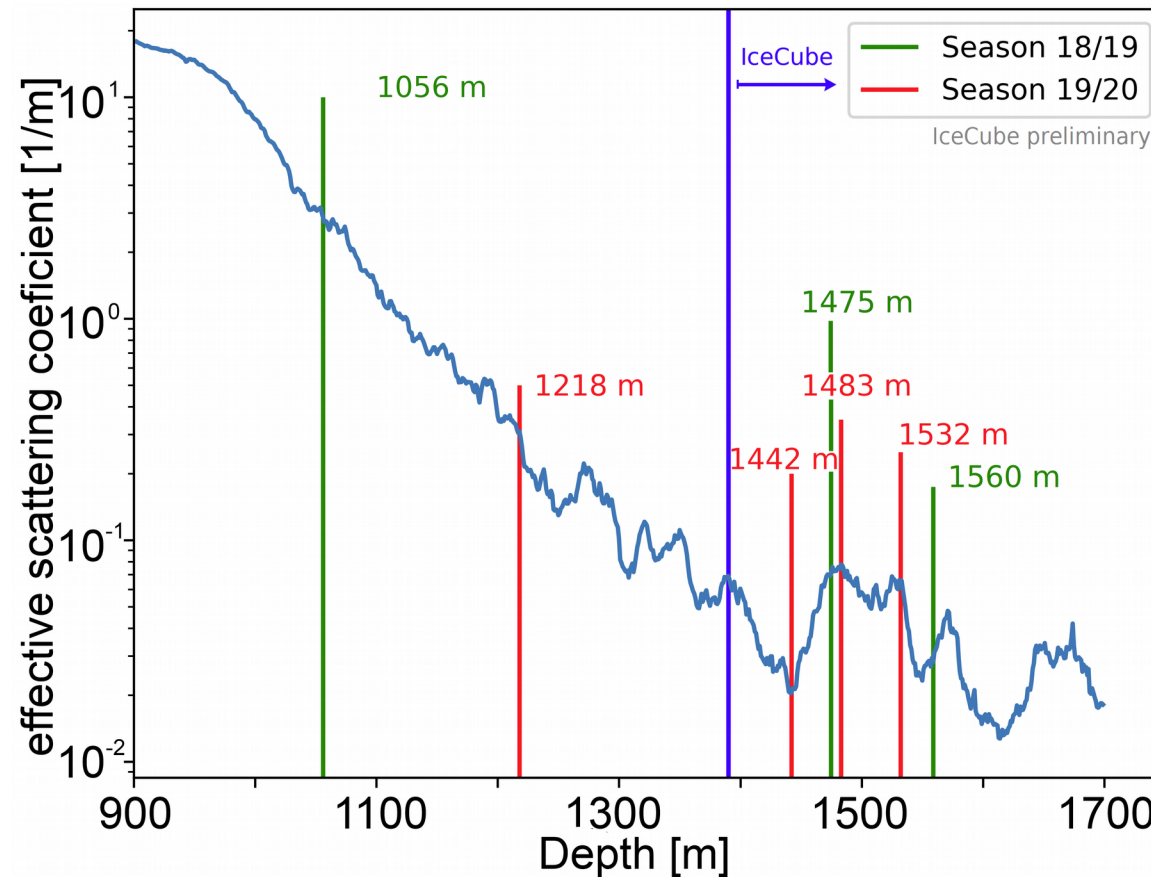
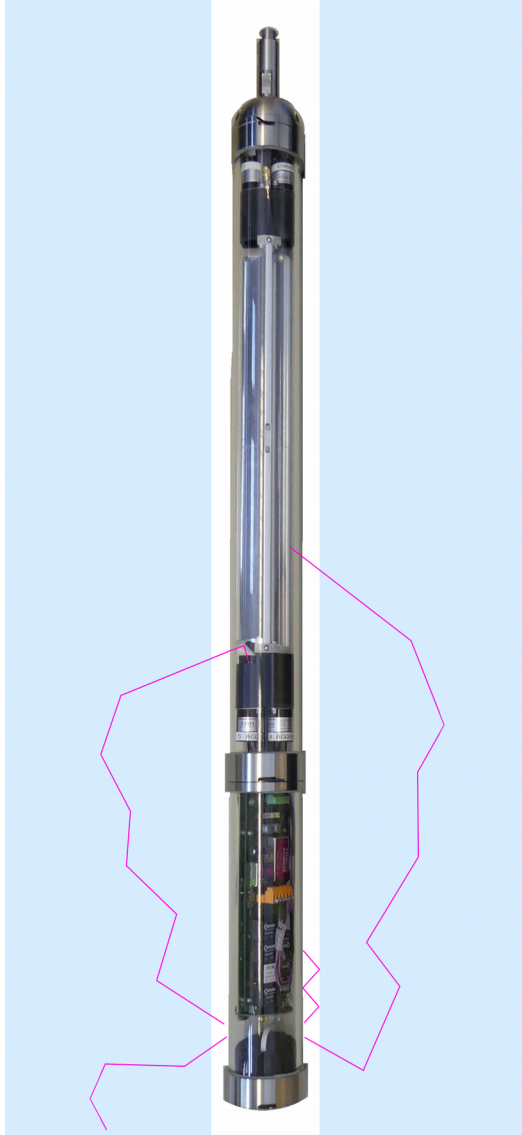
Jannes Brostean-Kaiser  
Zeuthen, 01.06.2021



# UV Calibration device

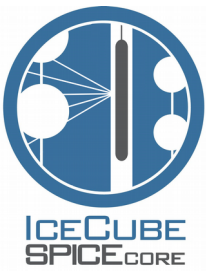
2018/2019 & 2019/2020

| Wavelengths: | 2018/2019 | 2019/2020   |
|--------------|-----------|-------------|
|              | 278 nm    | 245 nm (2x) |
|              |           | 310 nm      |
|              |           | 370 nm      |



# UV Calibration device

## Design & Development

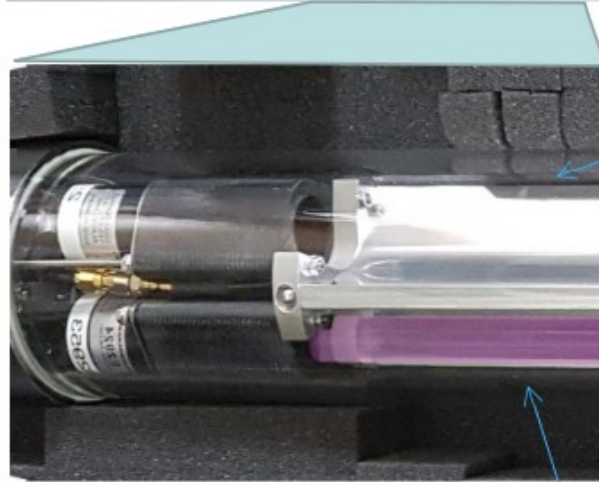


Top endcap  
with winch connector

Detector

Main/UV board

Bottom endcap



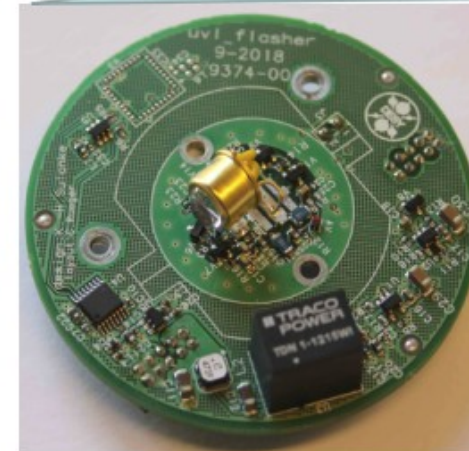
Aluminum  
mirror



Wavelength  
shifting rod

3 top PMTs

3 bottom PMTs



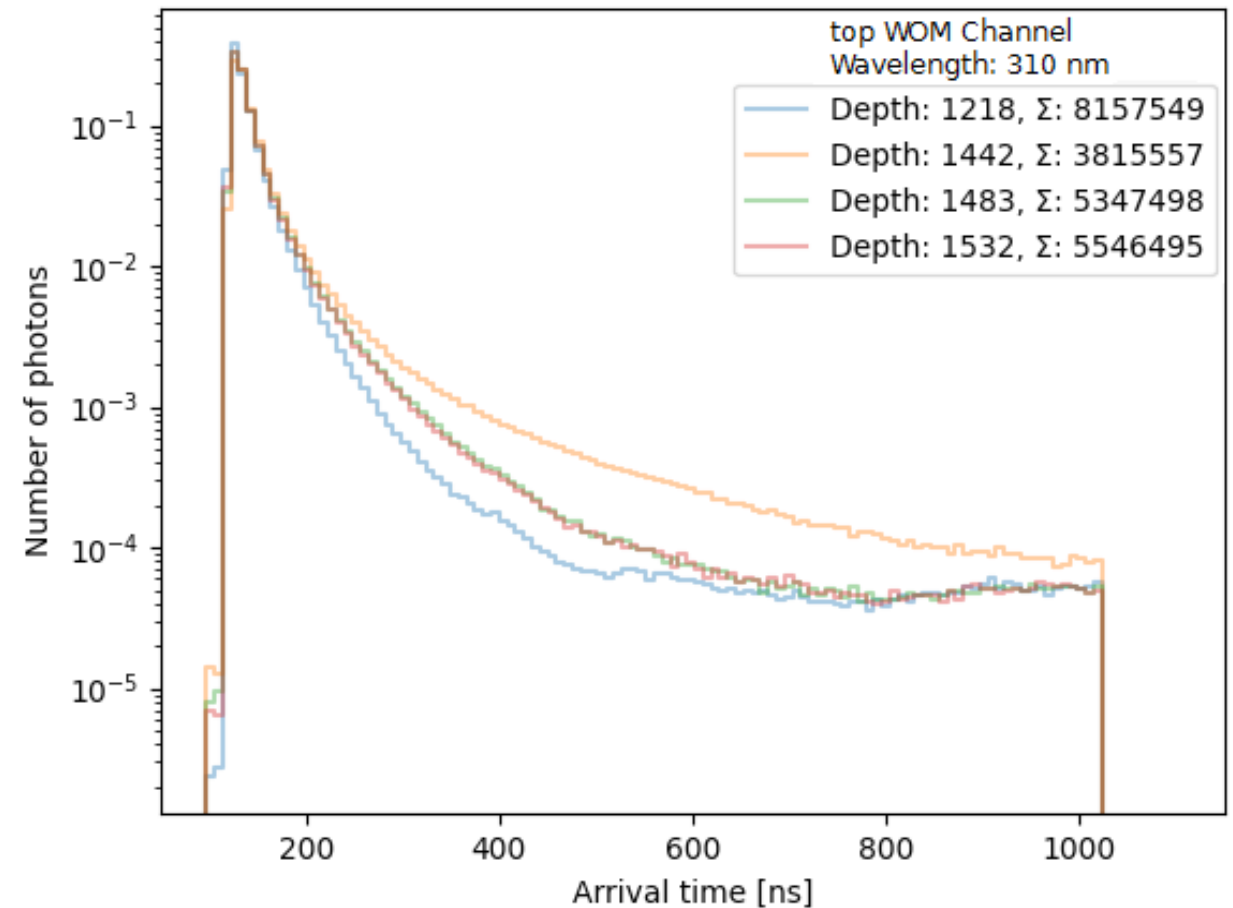
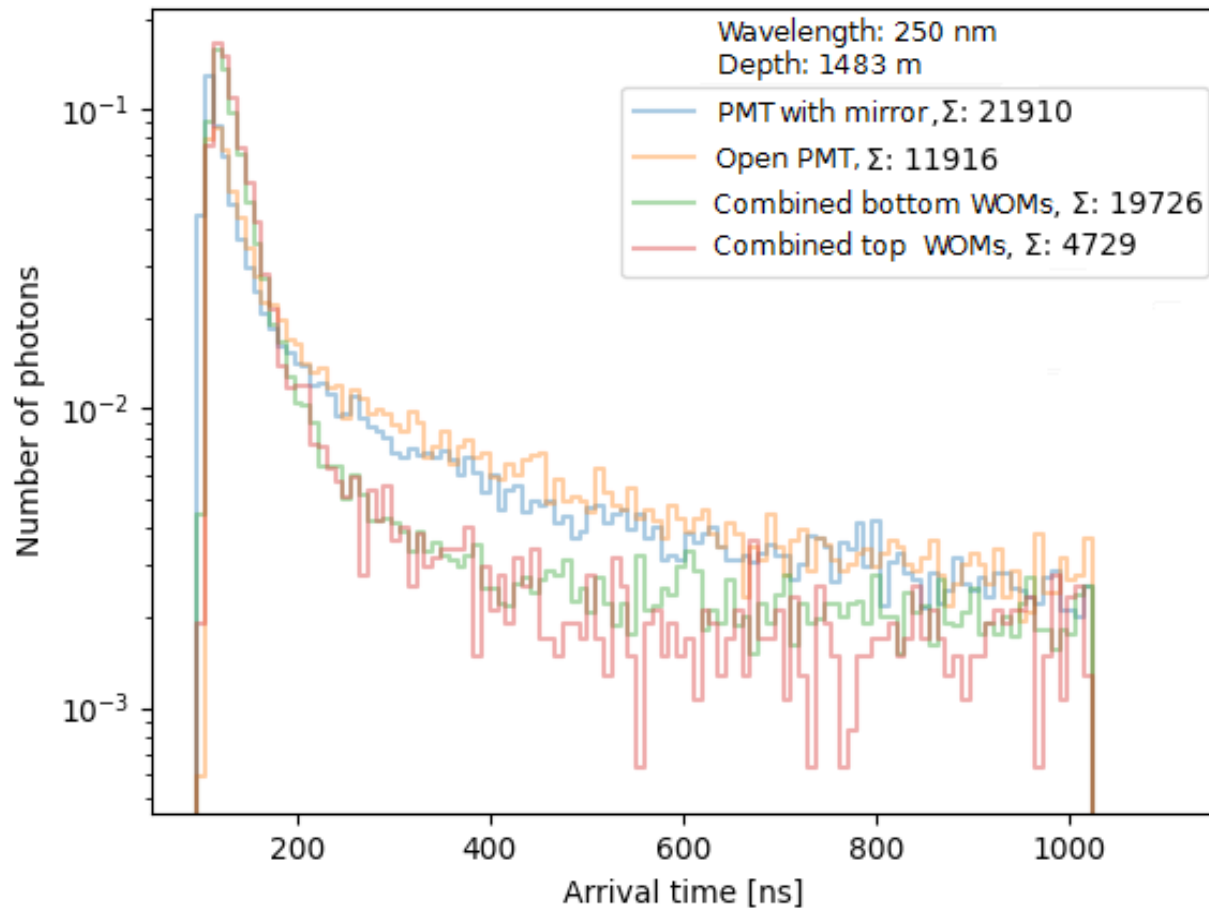
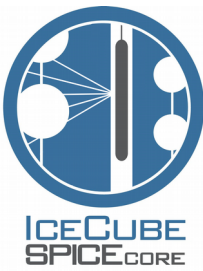
Flasherboard



Harness

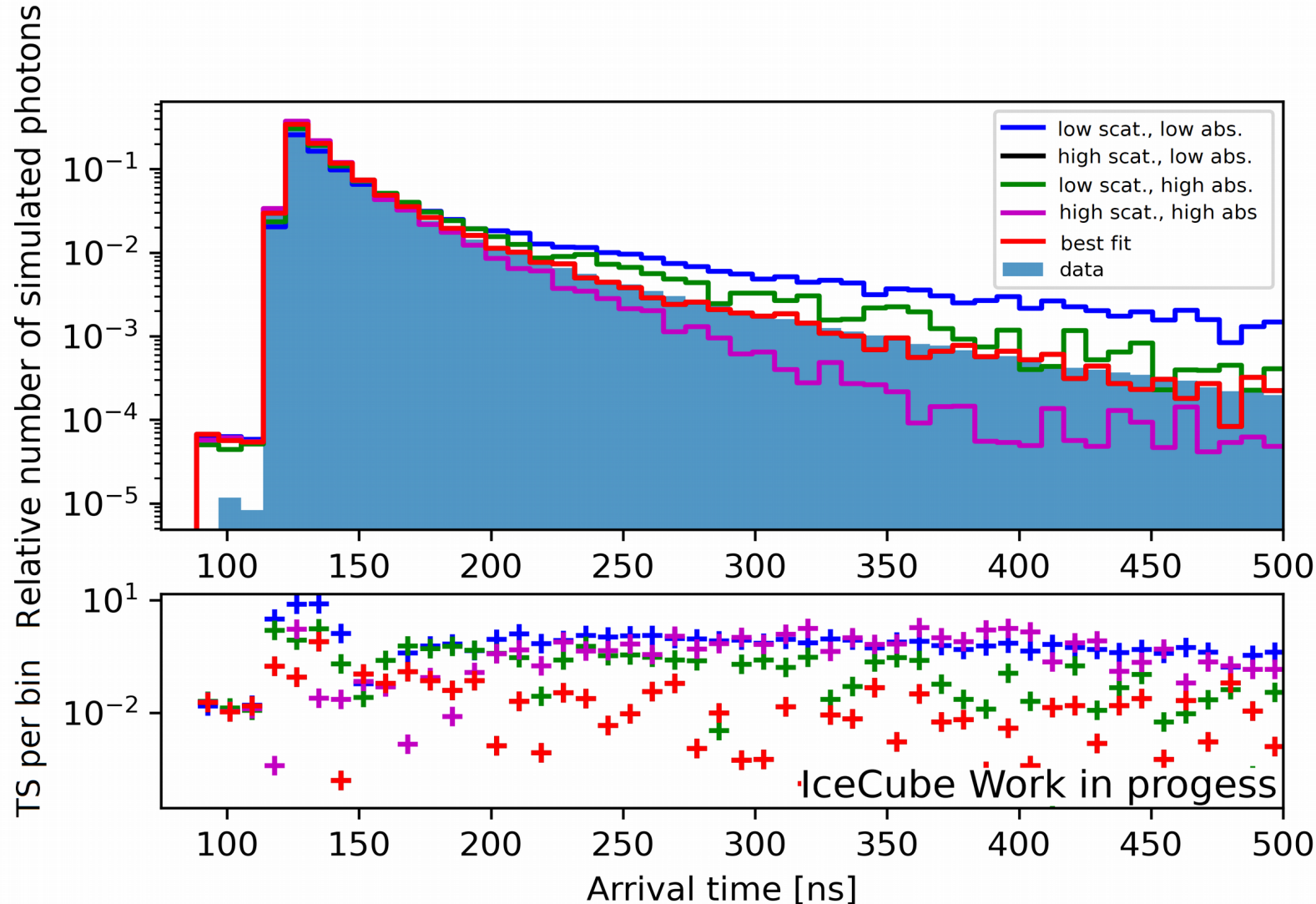
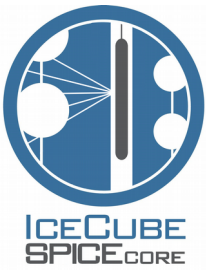
# Measurement

## Two example datasets of measurement



# Data Analysis

## Comparison to a simulation



Simulation with Rayleigh Scattering:  
 $(1 - \cos(\theta))^2$  distribution

$$TS = \sum_{i=1}^N \frac{(d_i - a_i \cdot N_d / N_a)^2}{d_i + a_i \cdot N_d^2 / N_a^2}$$

Fit Parameter:

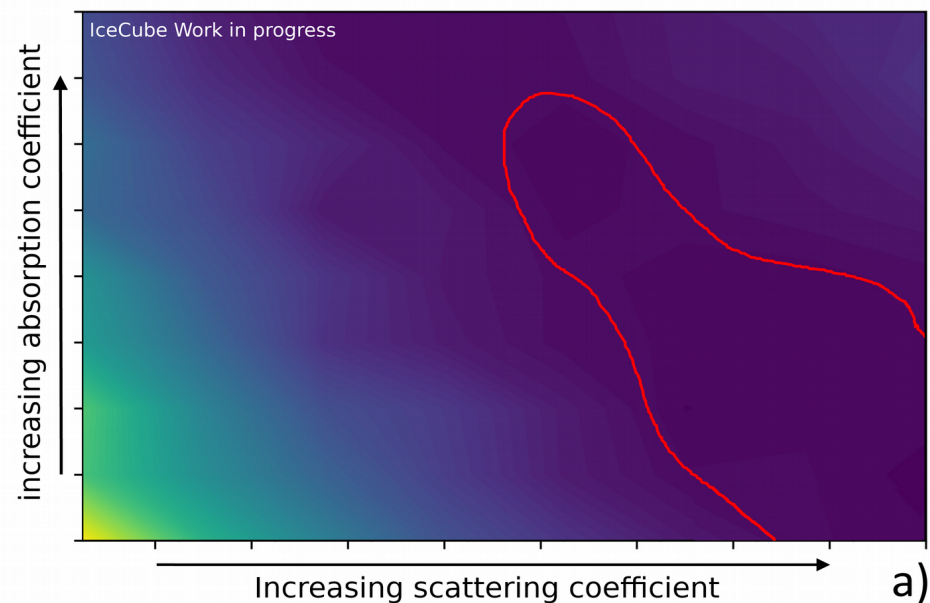
- Scattering coefficient
- Absorption coefficient

Offset fitted as additional  
 parameter for every Channel

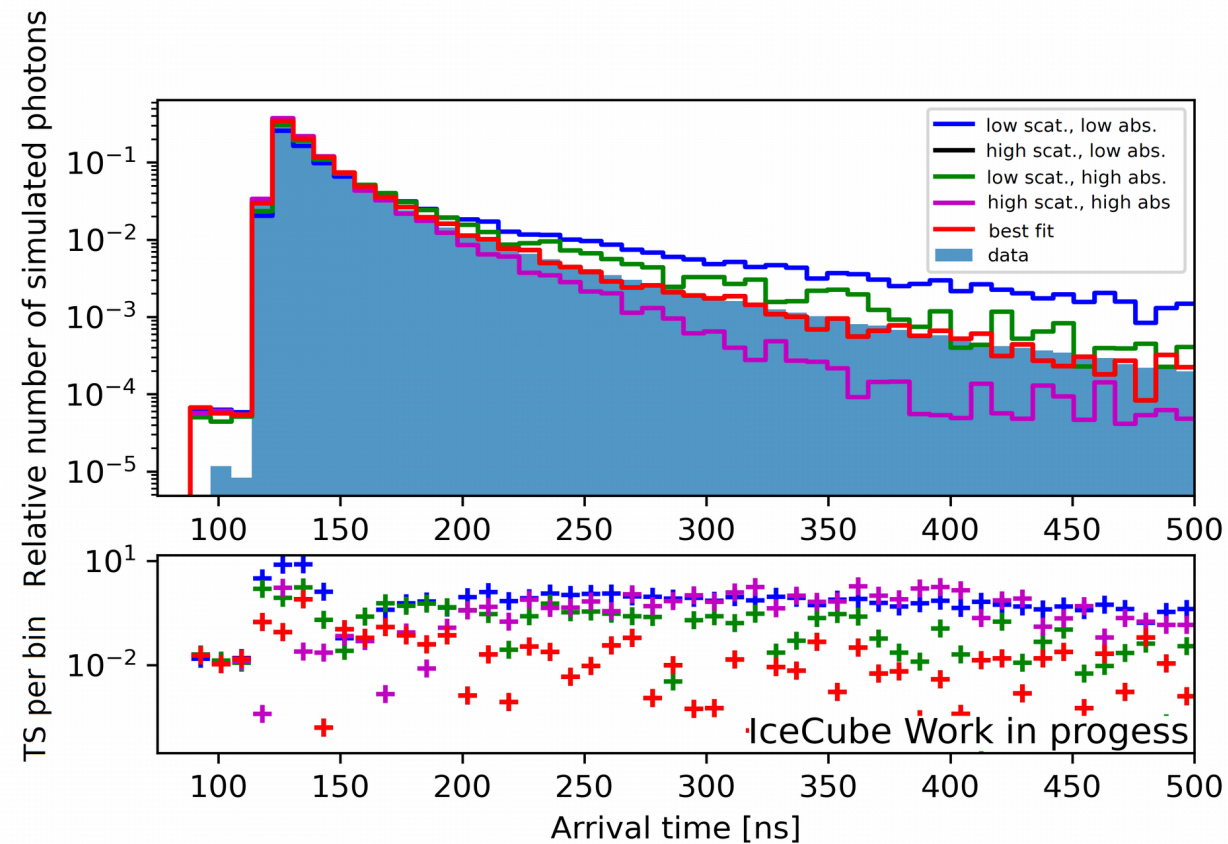
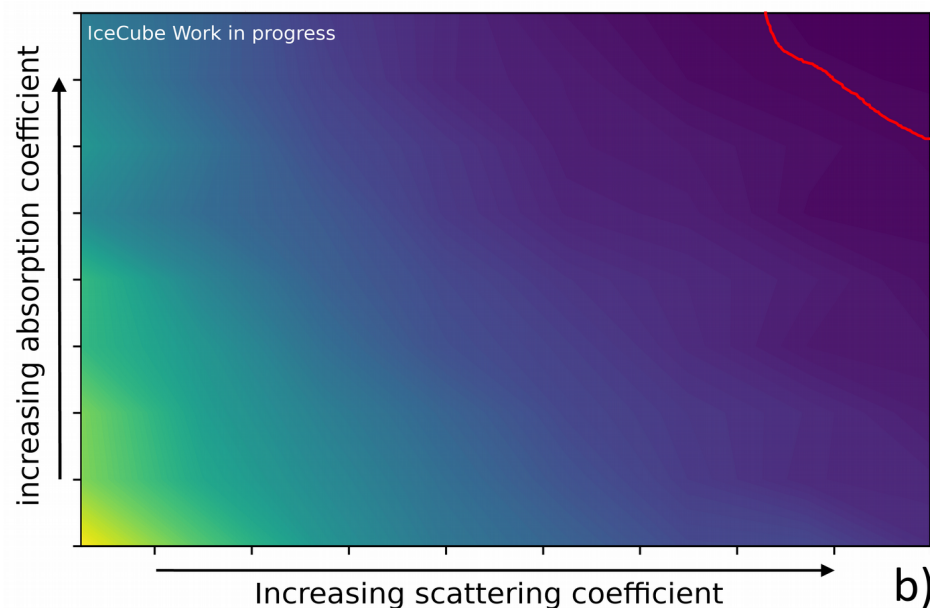
# 2D Scans

Parameter scan for every measurement

Channel 1



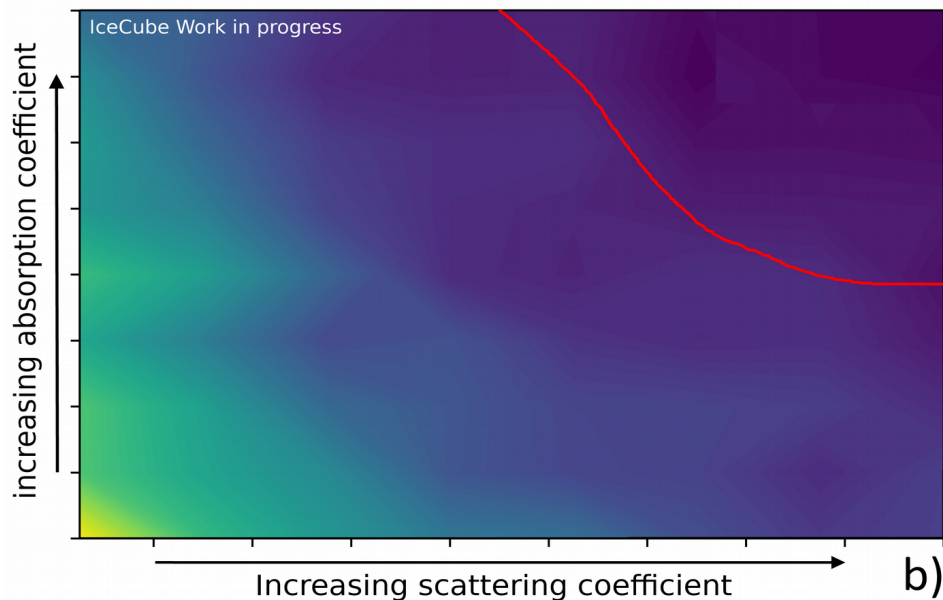
Channel 2



# 2D Scans

Parameter scan for every measurement

Channel 1



Channel 2

