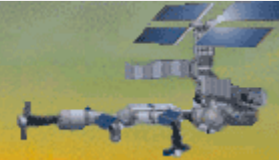




WRMISS



# **Dose mapping by SSNTD inside the Columbus module of the ISS – DOSIS project**

**J. K. Pálfalvi for the DOSIS team**

*Hungarian Academy of Sciences*

*KFKI Atomic Energy Research Institute*

*P.O.B. 49, H-1525 Budapest, Hungary*

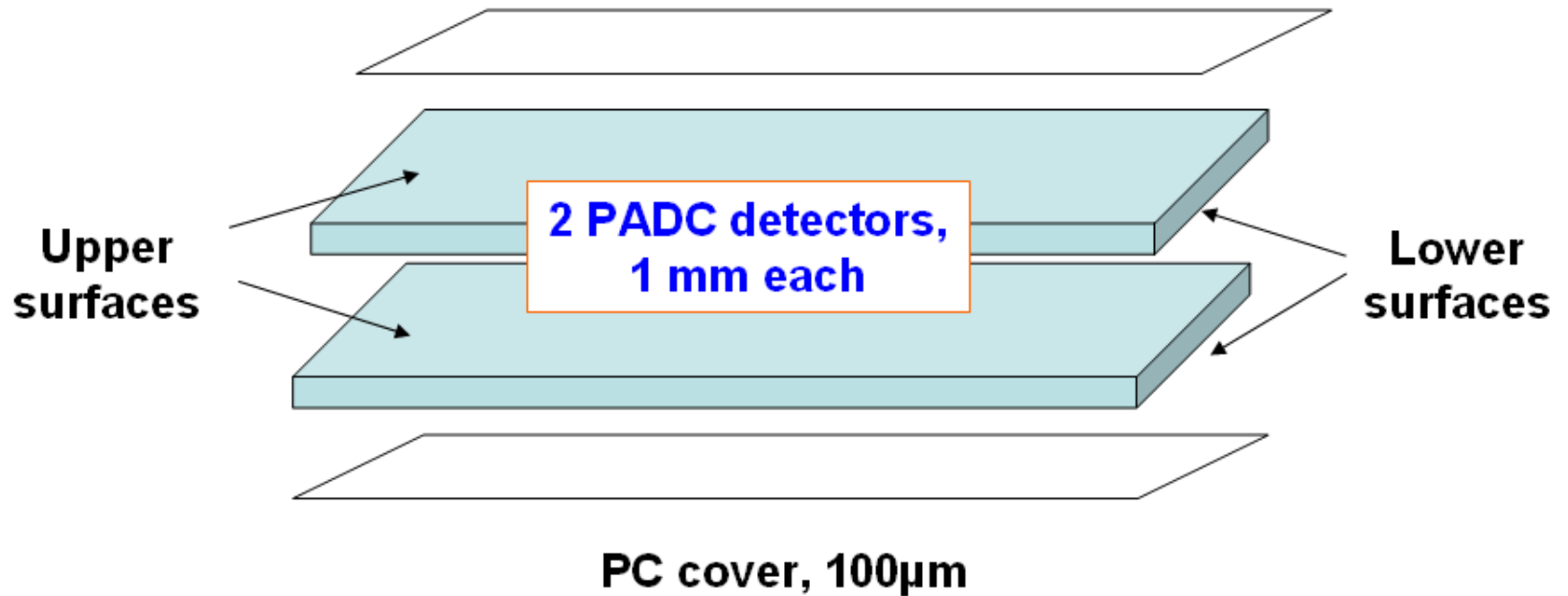
**15<sup>th</sup> Workshop on Radiation Monitoring for the International Space Station**

**7-9 September 2010**

**Frascati, Italy**

## AERI DOSIS-1 stack composition

PC cover, 100 $\mu$ m



PC cover, 100 $\mu$ m

**Etching in 6 N NaOH at  $70 \pm 0.1$  °C, N<sub>2</sub> bubble stirring applied**

**1<sup>st</sup> step: 6 h, ~8 μm removal**

**2<sup>nd</sup> step: 15h, ~20 μm removal**

**Controlled by standardized Po alpha source**

**LET spectra corrected for critical angle and background**

**Semi-automated track analysis**

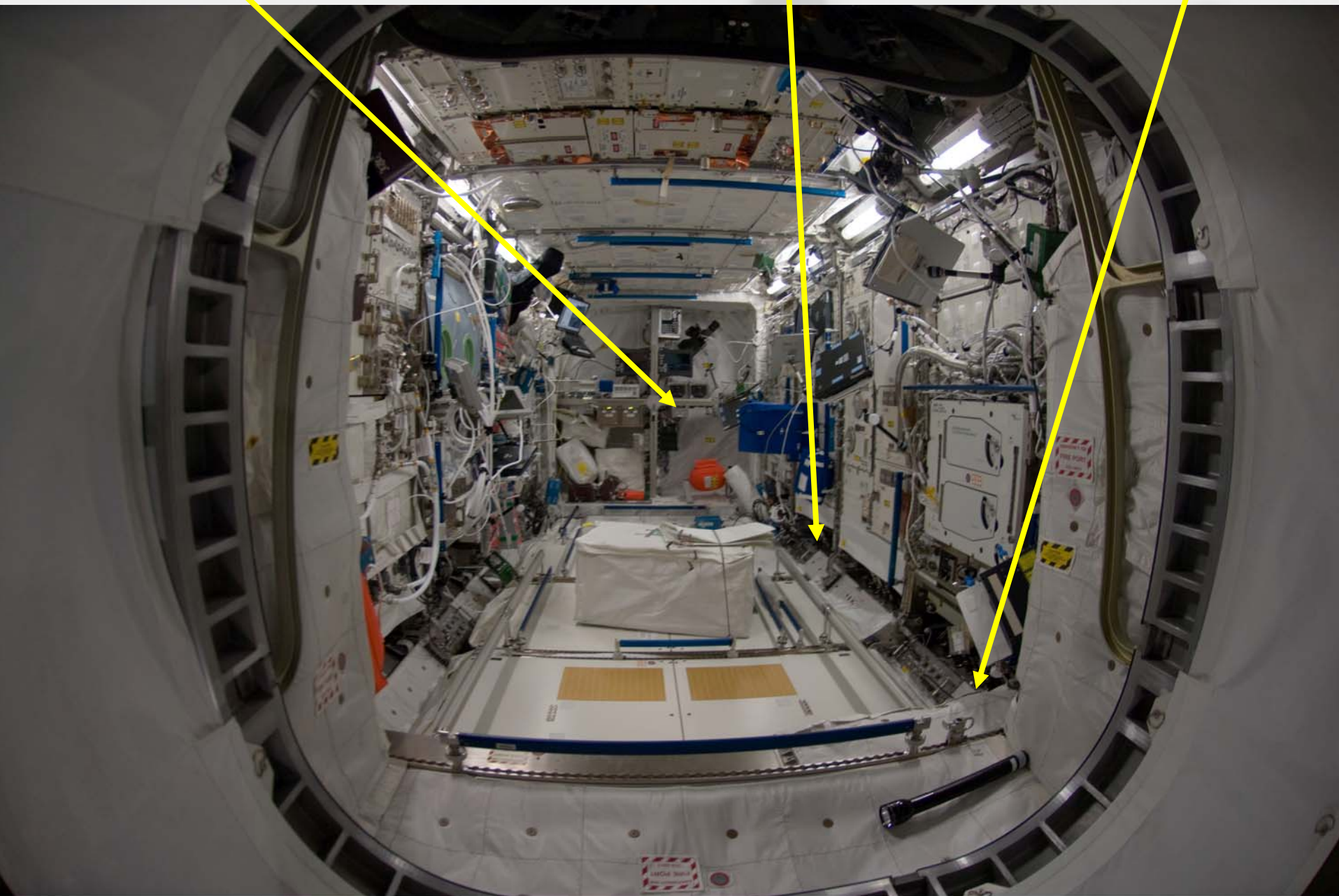
**Long range particles' parameters measured manually**

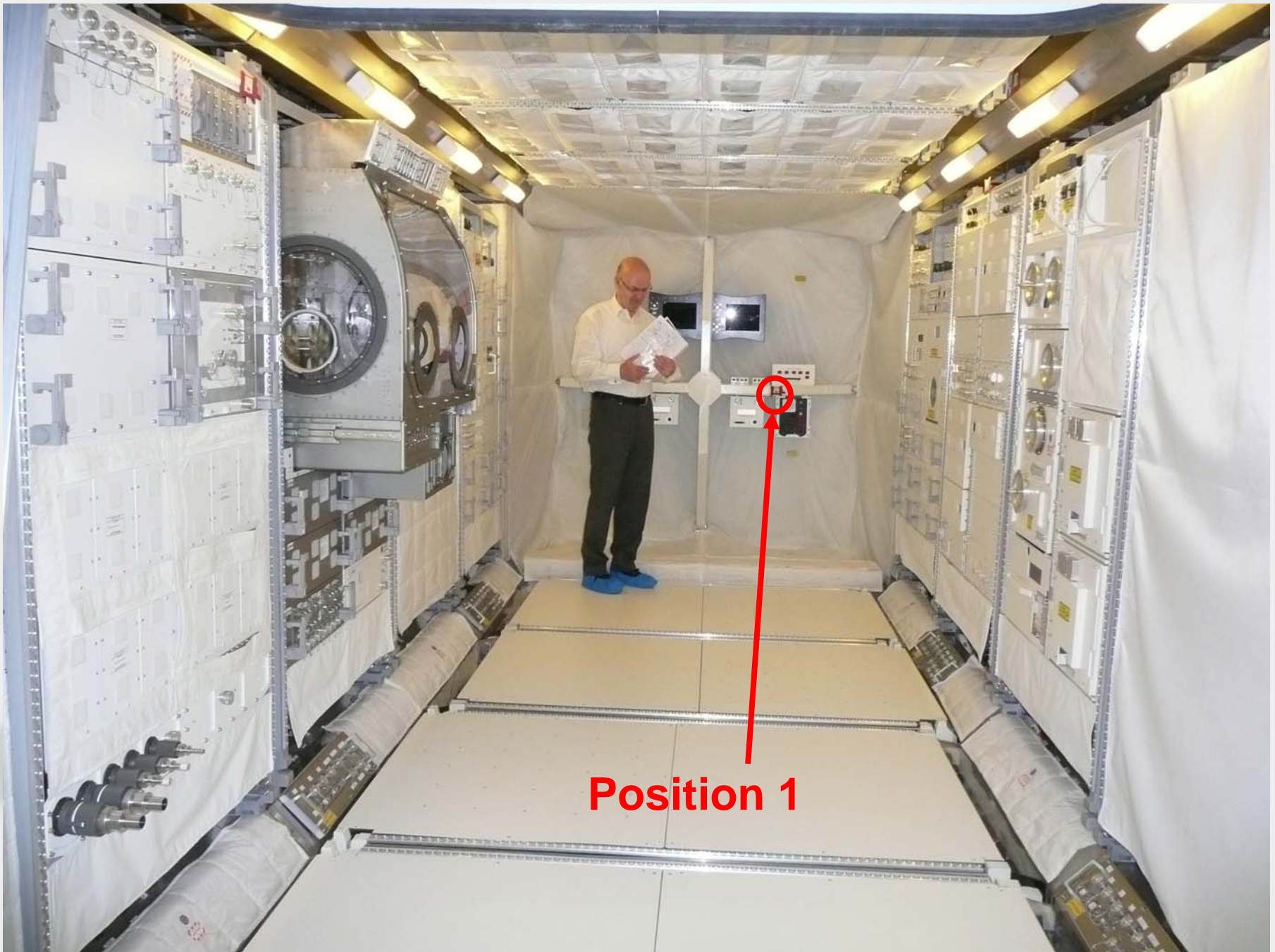
**Short & Long etch LET spectra were combined**

**Position 1**

**Position 3D**

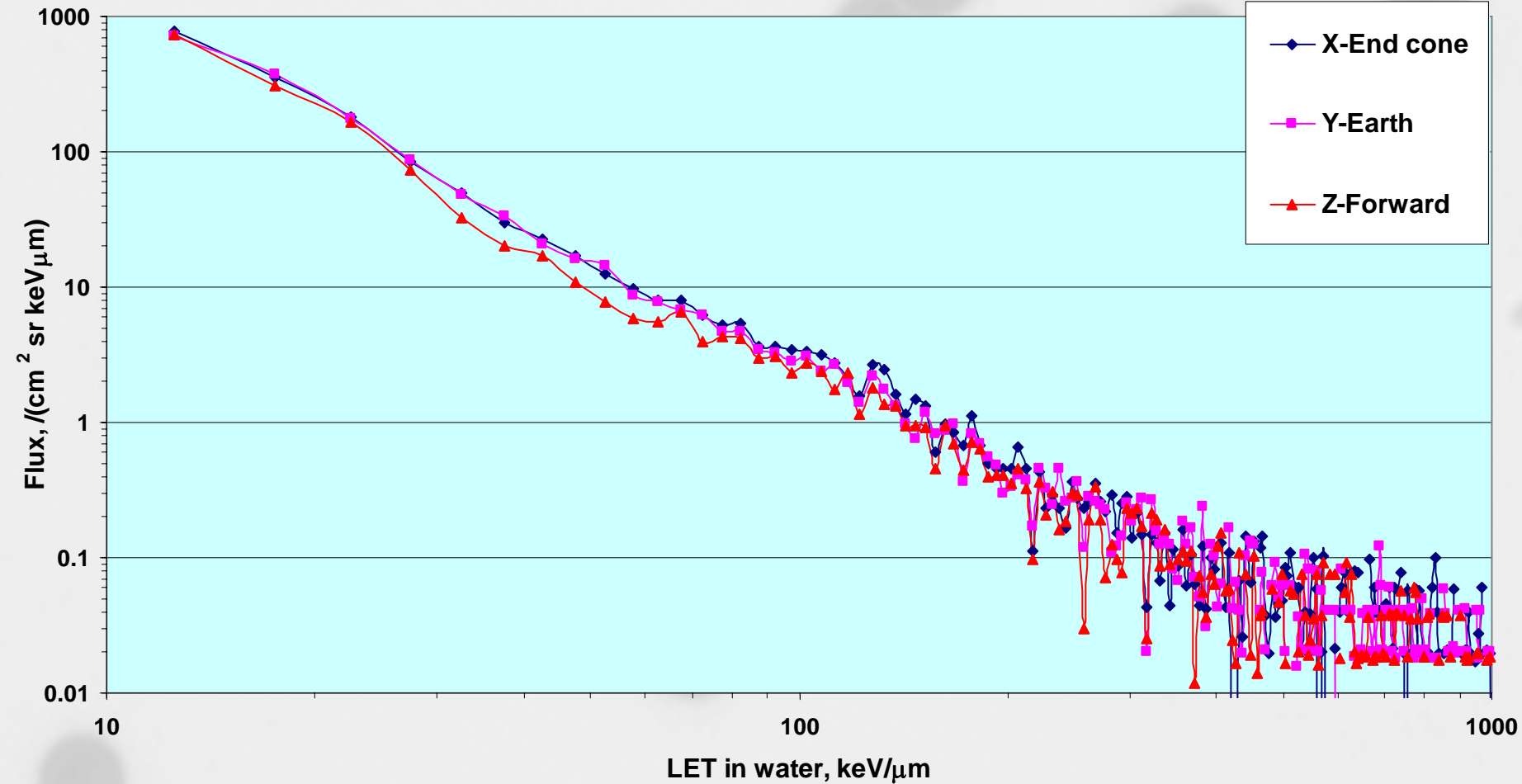
**Position 10**



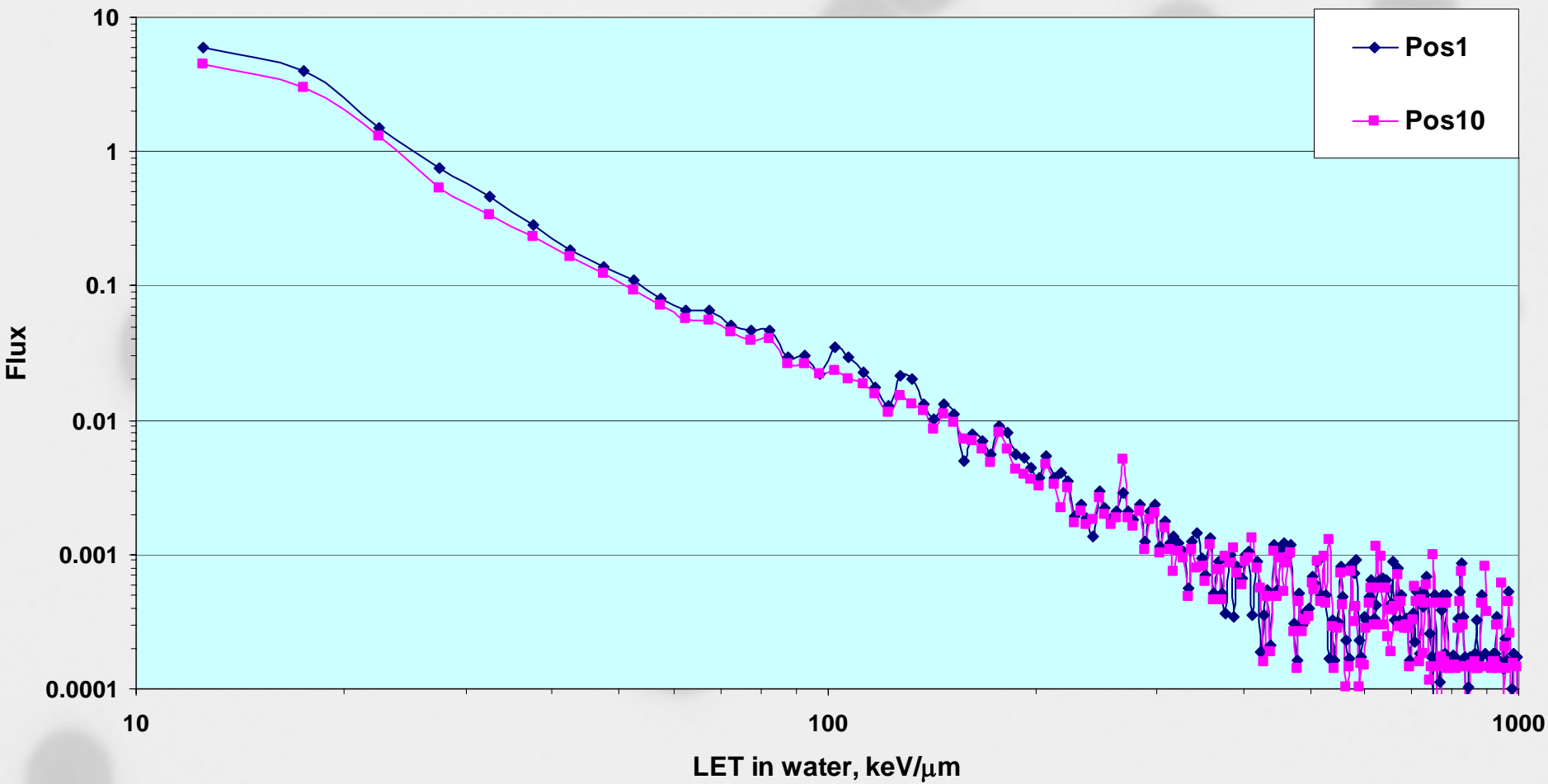


**Position 1**

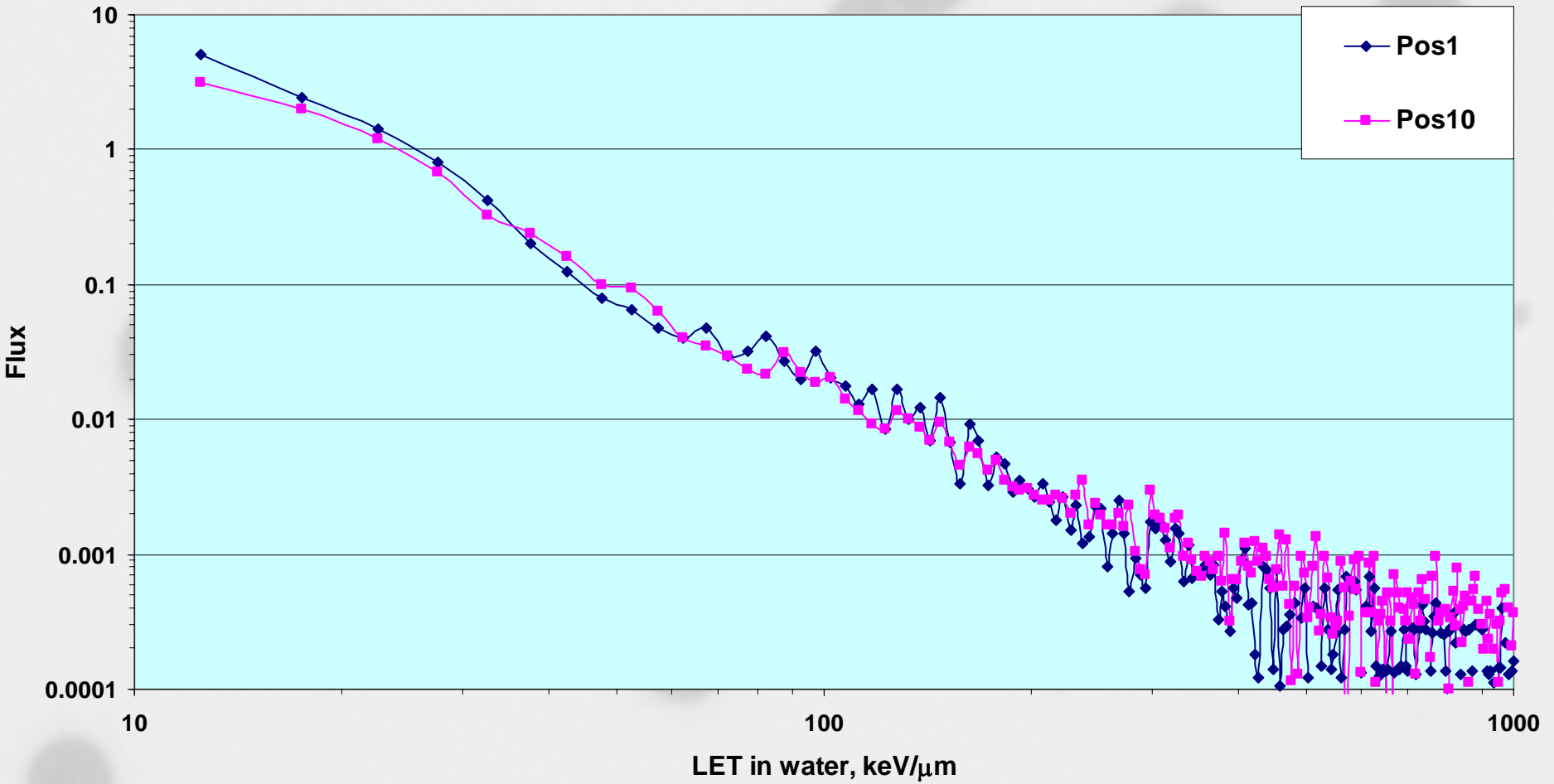
# AERI DOSIS-1, 3D



# DOSIS-1

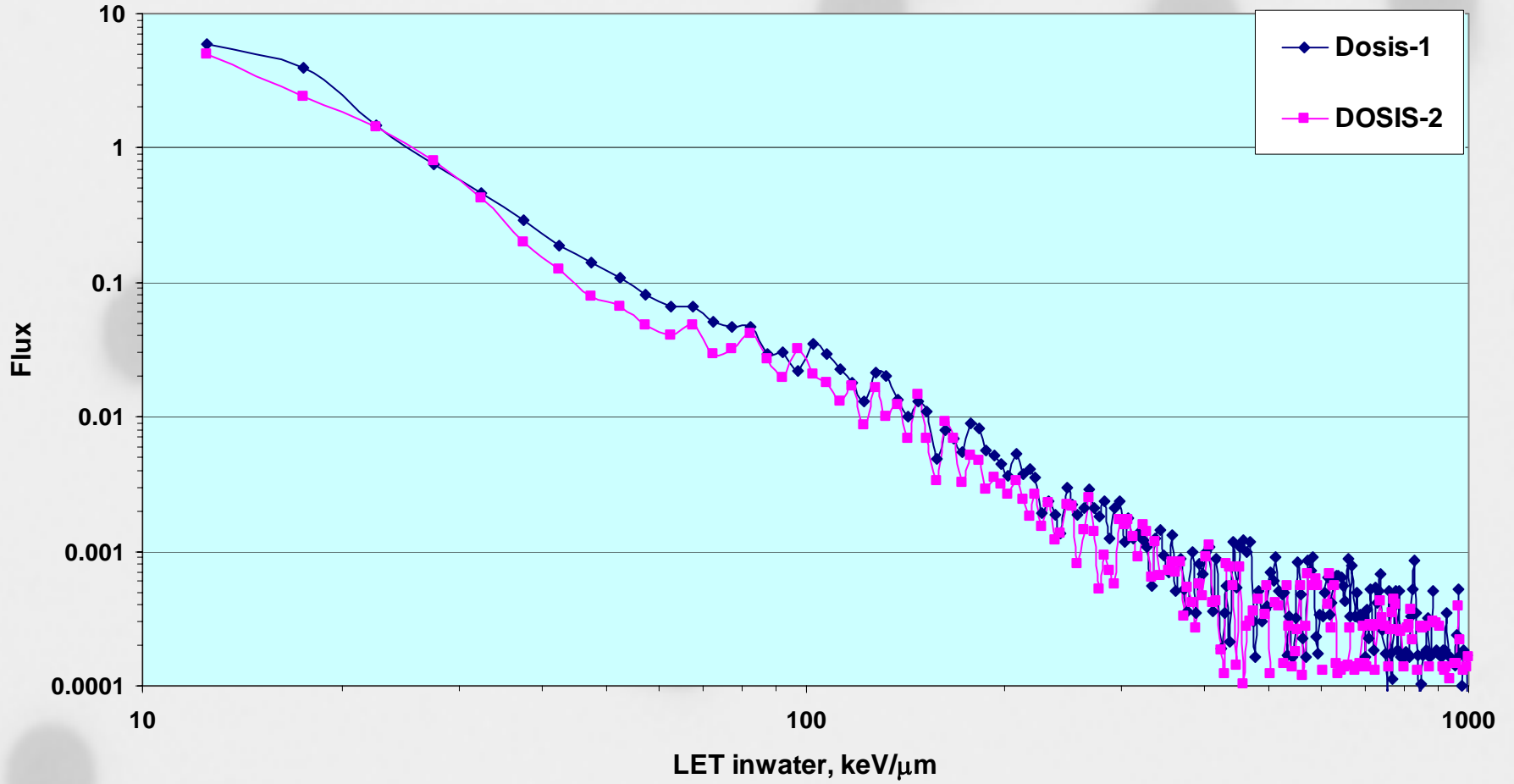


# DOSIS-2





# Position 1, End cone



## SSNTD Doses above 10 keV/ $\mu\text{m}$

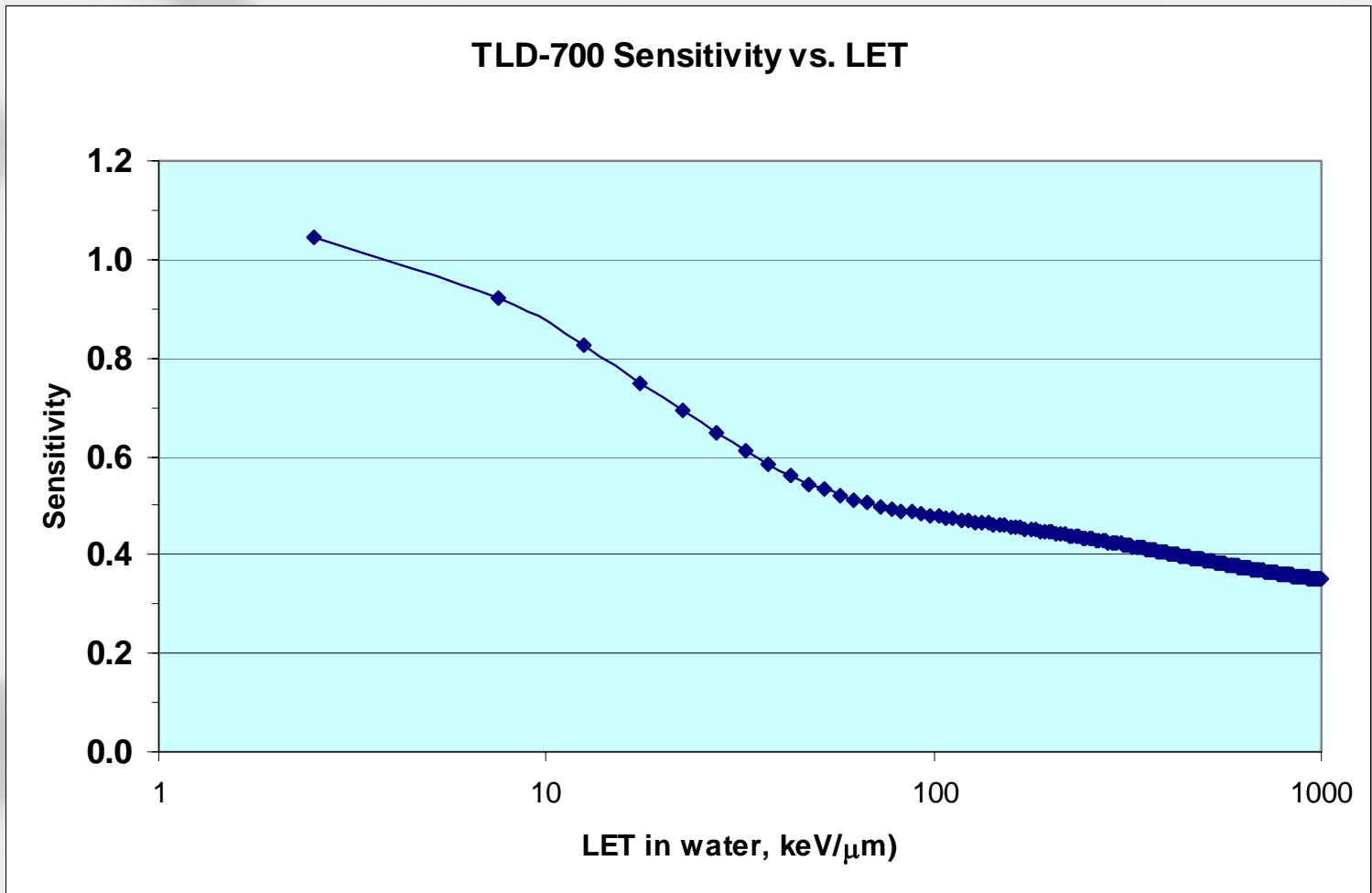
4 detector surfaces were averaged

<i>Experiment / Position</i>	<i>Flux (<math>\text{cm}^2 \text{ sr keV}/\mu\text{m}</math>)<sup>-1</sup></i>	<i>Dose rate <math>\mu\text{Gy}/\text{d}</math></i>	<i>Dose equivalent rate <math>\mu\text{Sv}/\text{d}</math></i>	<i>Q</i>
<i>D-1 / Pos 1</i>	12.90	33.01	318.42	9.65
<i>D-1 / Pos 10</i>	10.03	26.87	268.12	9.88
<i>D-2 / Pos1</i>	11.13	27.48	256.57	9.34
<i>D-2 / Pos10</i>	8.47	24.90	255.00	10.24

1 SD < 10%

## TLD-700 sensitivity by DLR

$$S = 0.332 + 0.1806 \cdot e^{-0.0023 \cdot \text{LET}} + 0.6089 \cdot e^{-0.0521 \cdot \text{LET}}$$



Total Dose rates on selected places during the DOSIS-1 & 2 investigations

<i>Experiment / Position</i>	<i>TLD Dose rate μGy/d</i>	<i>TLD Dose rate corrected μGy/d</i>	<i>Total Dose rate μGy/d</i>	<i>Dose equivalent rate μSv/d</i>	<i>Q</i>
<i>D-1 / Pos 1</i>	256.8	235.9	268.9	554.3	2.06
<i>D-1 / Pos 10</i>	224.3	207.6	234.5	475.7	2.03
<i>D-2 / Pos 1</i>	244.7	227.0	254.5	483.6	1.90
<i>D-2 / Pos10</i>	211.1	196.0	220.9	451.0	2.04



**Thanks for your attention!**

