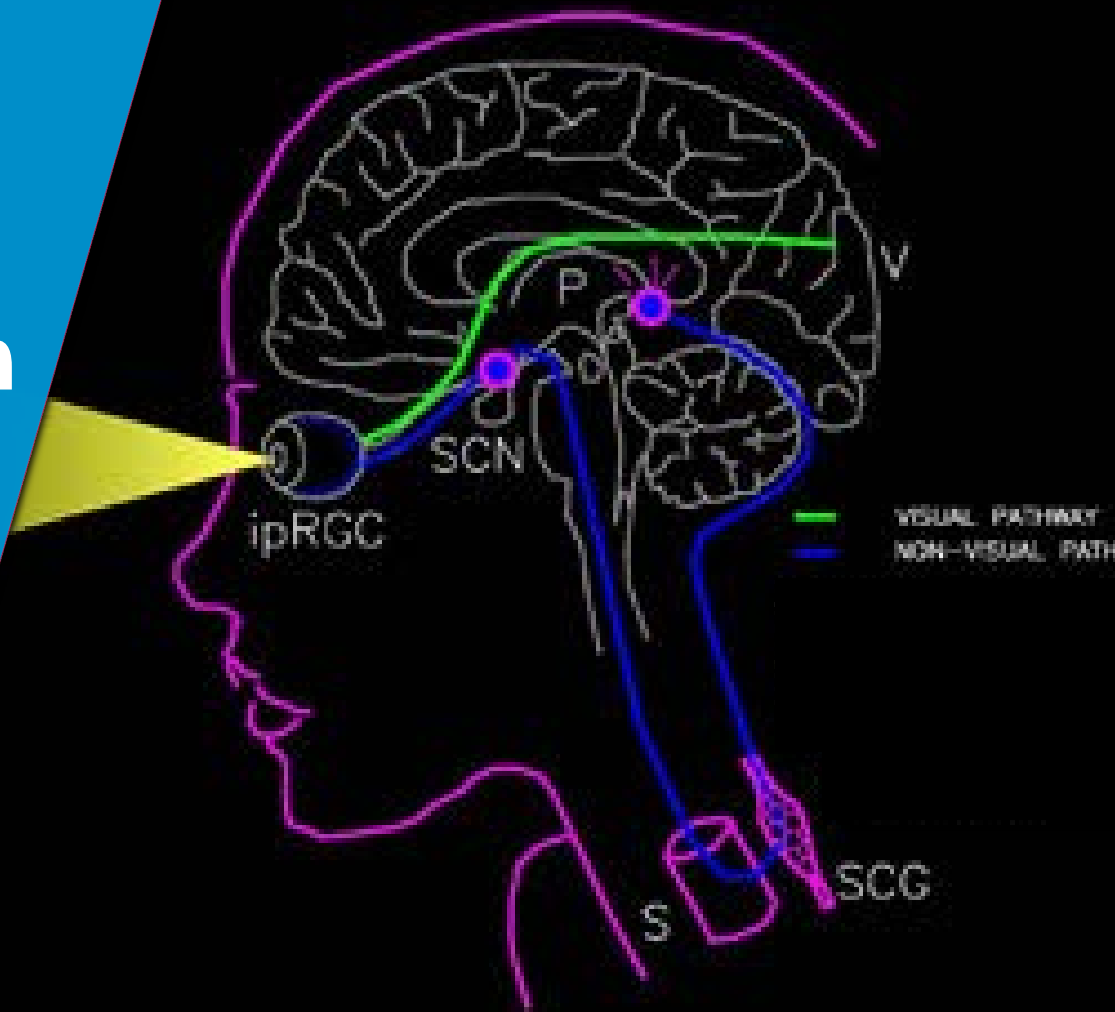
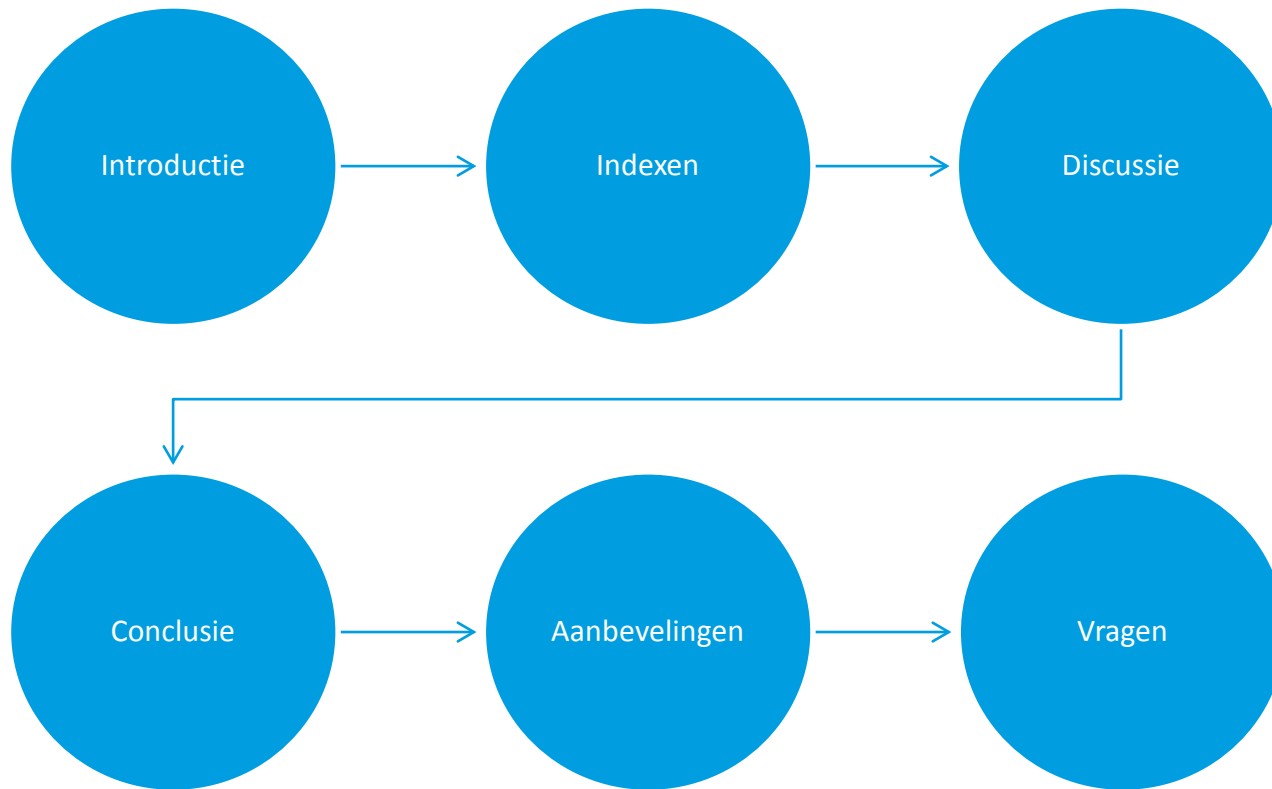


Vergelijking van licht en gezondheid meetinstrumenten

Juliëtte van Duijnhoven

CIE Day - 19 oktober 2015





Introductie

Indexen

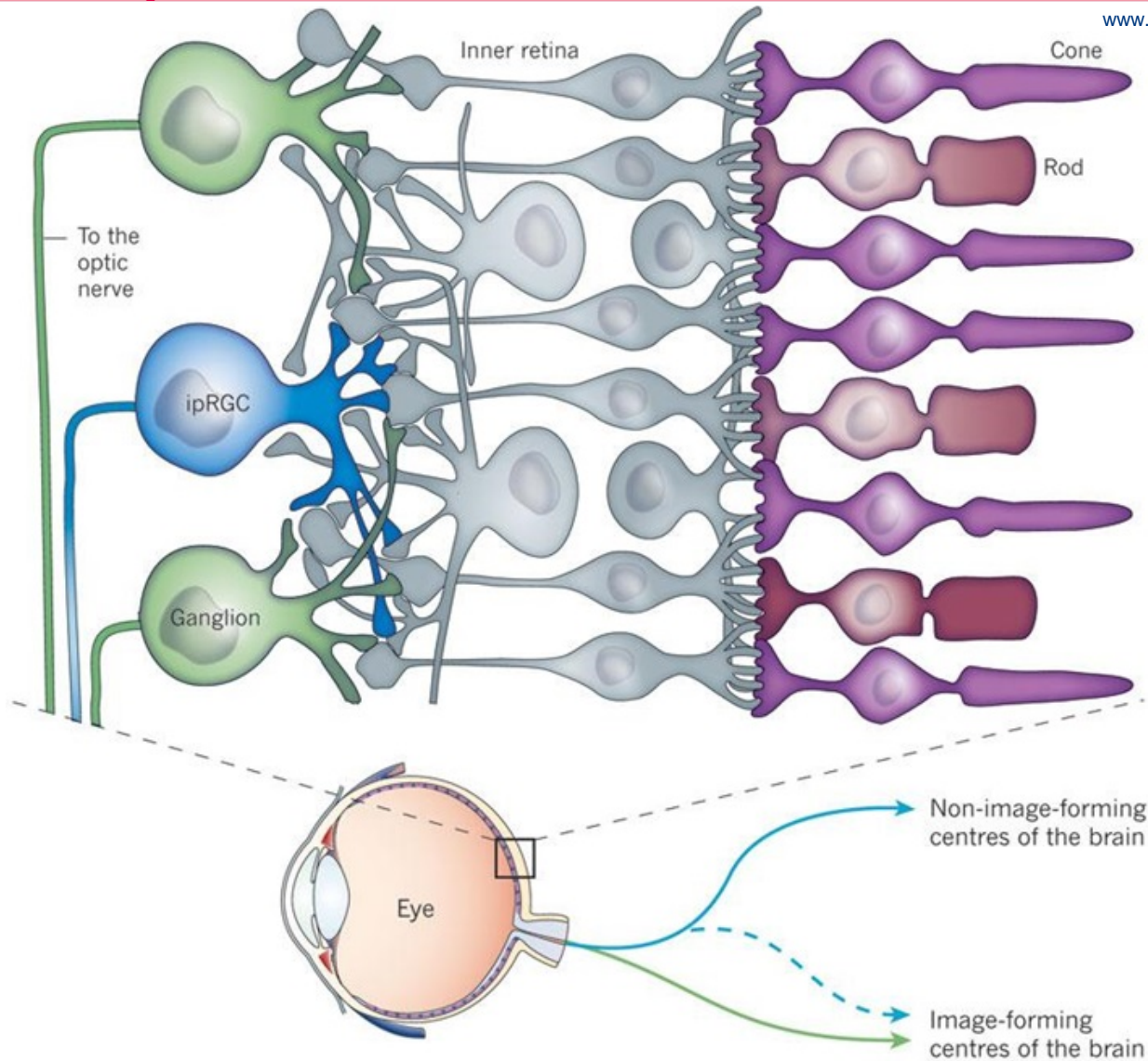
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Introductie



Introductie



Introductie



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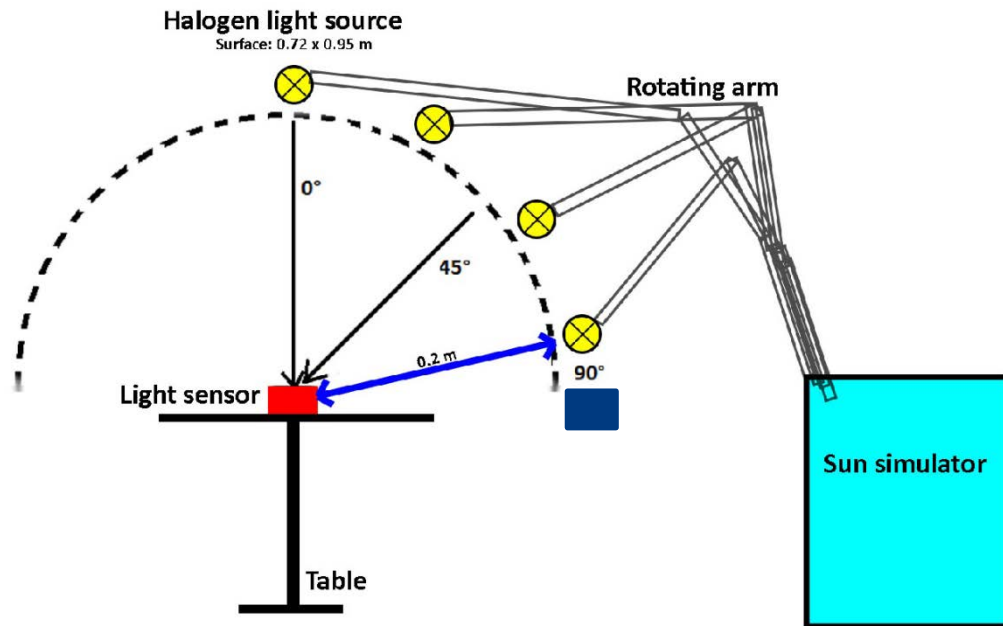
Quality Index	Index Name	Class L	Class A	Class B	Class C
f_{adj}	Initial Adjustment Index	1.0 %	1.5 %	3.0 %	5.0 %
f_1'	General $V(\lambda)$ Mismatch Index	1.5 %	3.0 %	6.0 %	9.0 %
f_{UV}	UV Response Index	0.2 %	1.0 %	2.0 %	4.0 %
f_{IR}	IR Response Index	0.2 %	1.0 %	2.0 %	4.0 %
f_2	Directional Response Index	-	1.5 %	3.0 %	6.0 %
f_3	Linearity Index	0.2 %	1.0 %	2.0 %	5.0 %
f_4	Display Unit Index	0.2 %	3.0 %	4.5 %	7.5 %
f_5	Fatigue Index	0.1 %	0.5 %	1.0 %	2.0 %
f_{6T}	Temperature Index	0.2 %	2.0 %	10.0 %	20.0 %
f_7	Modulated Light Index	0.1 %	0.2 %	0.5 %	1.0 %
f_9	Spatial Non-Uniformity Response Index	15.0 %	20.0 %	30.0 %	40.0 %
f_{11}	Range Change Index	0.1 %	0.5 %	1.0 %	2.0 %

the Standard DIN 5032 part 7

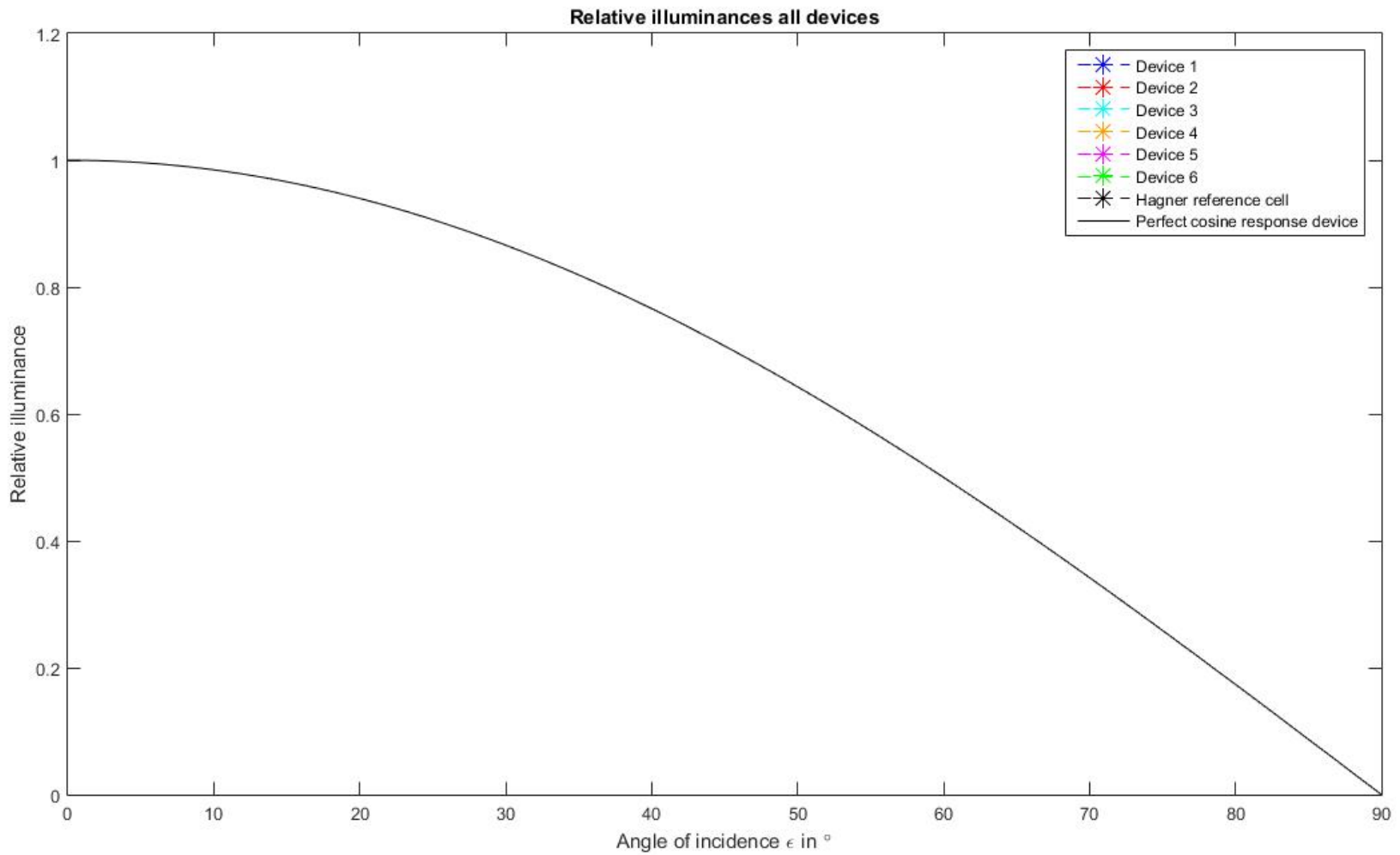
Indexen



➤ Cosinus afwijking (f_2)



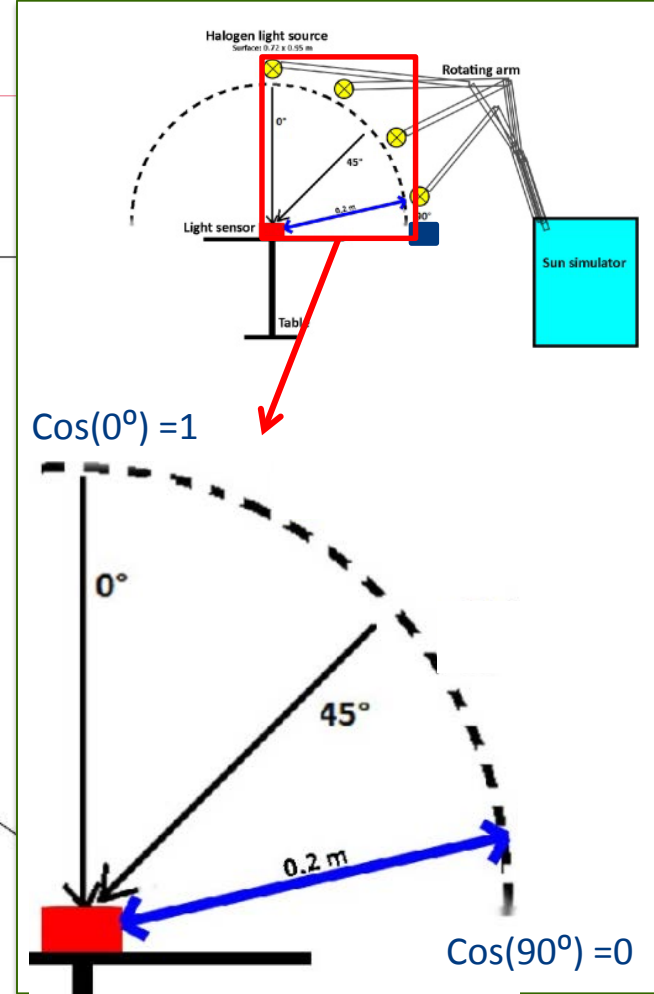
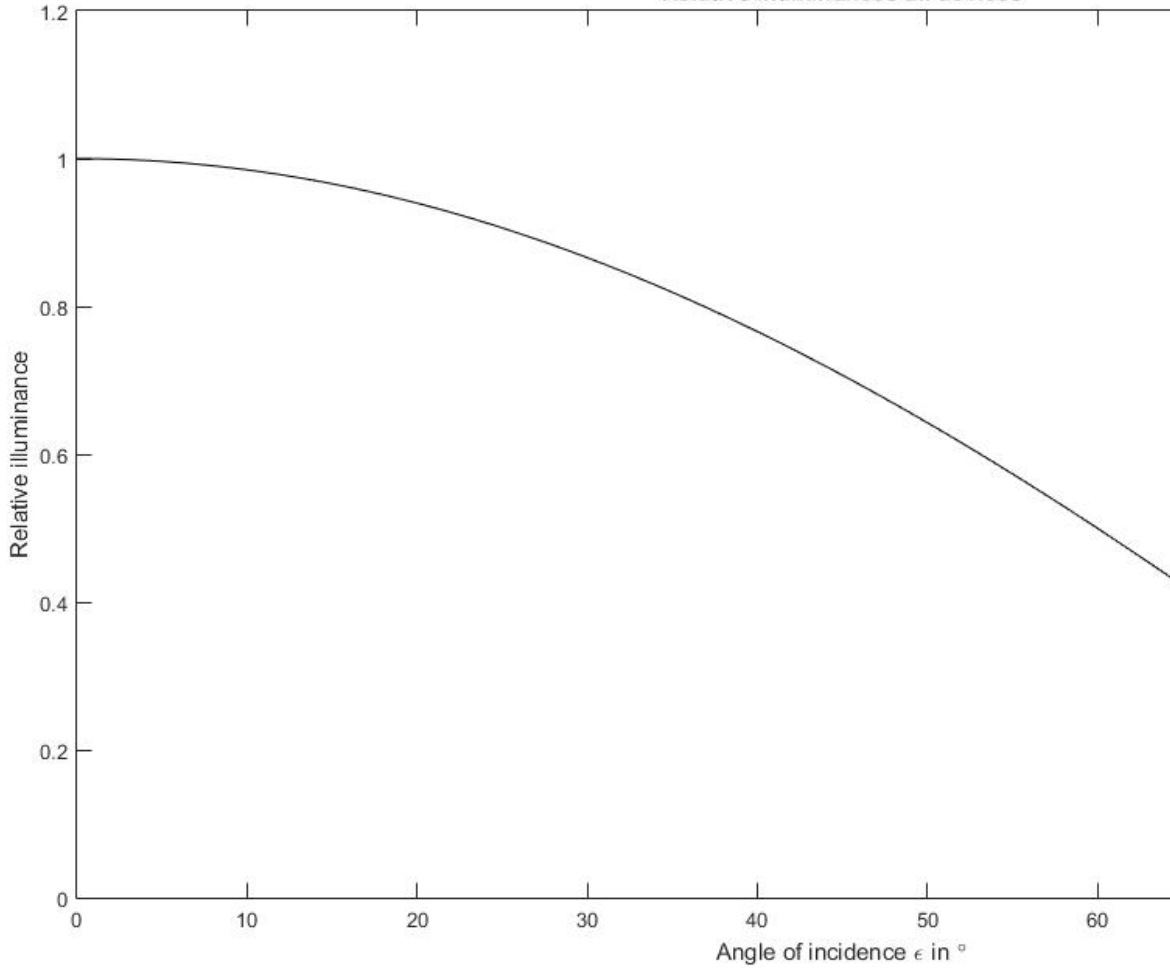
Indexen



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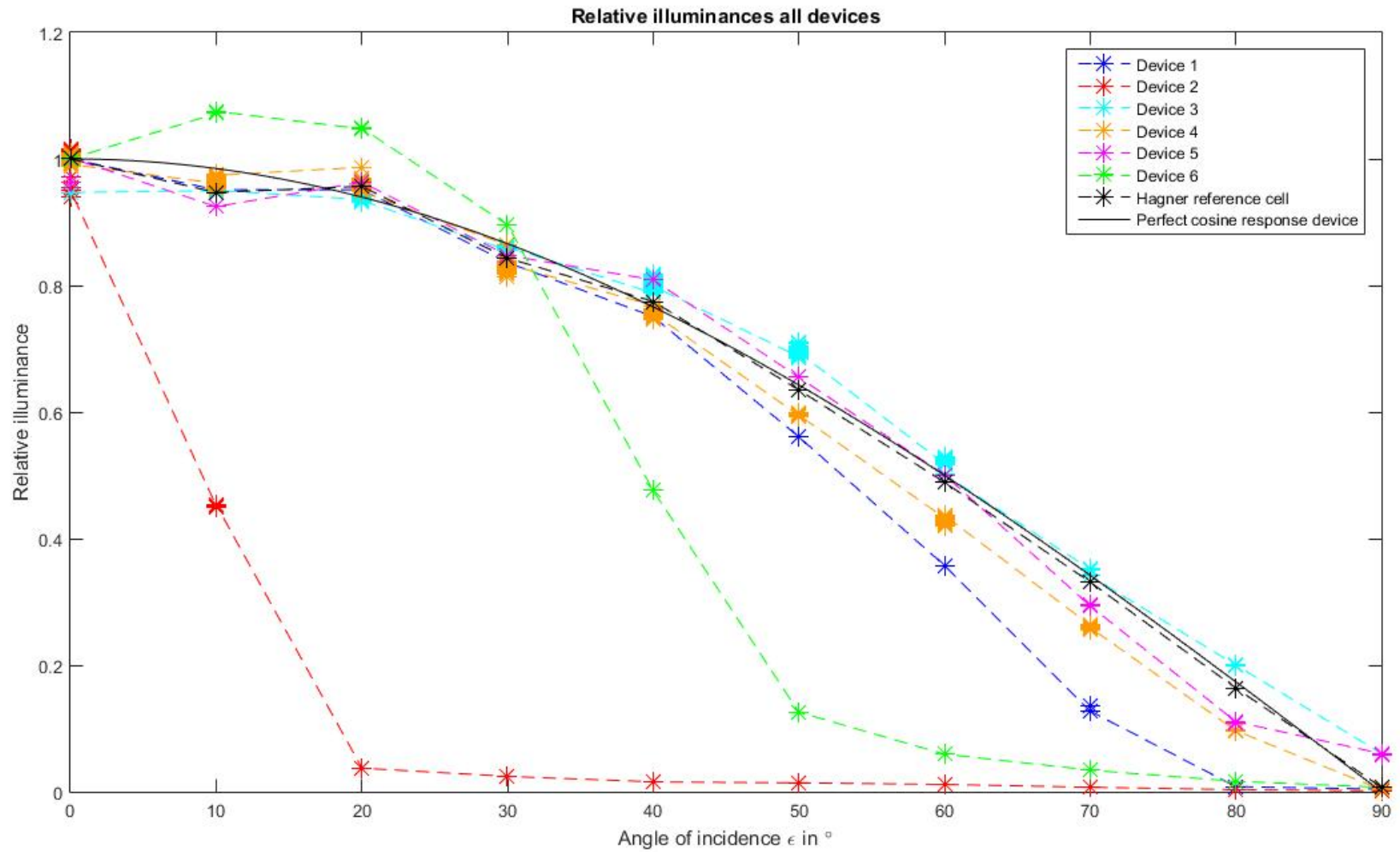


Relative illuminances all devices



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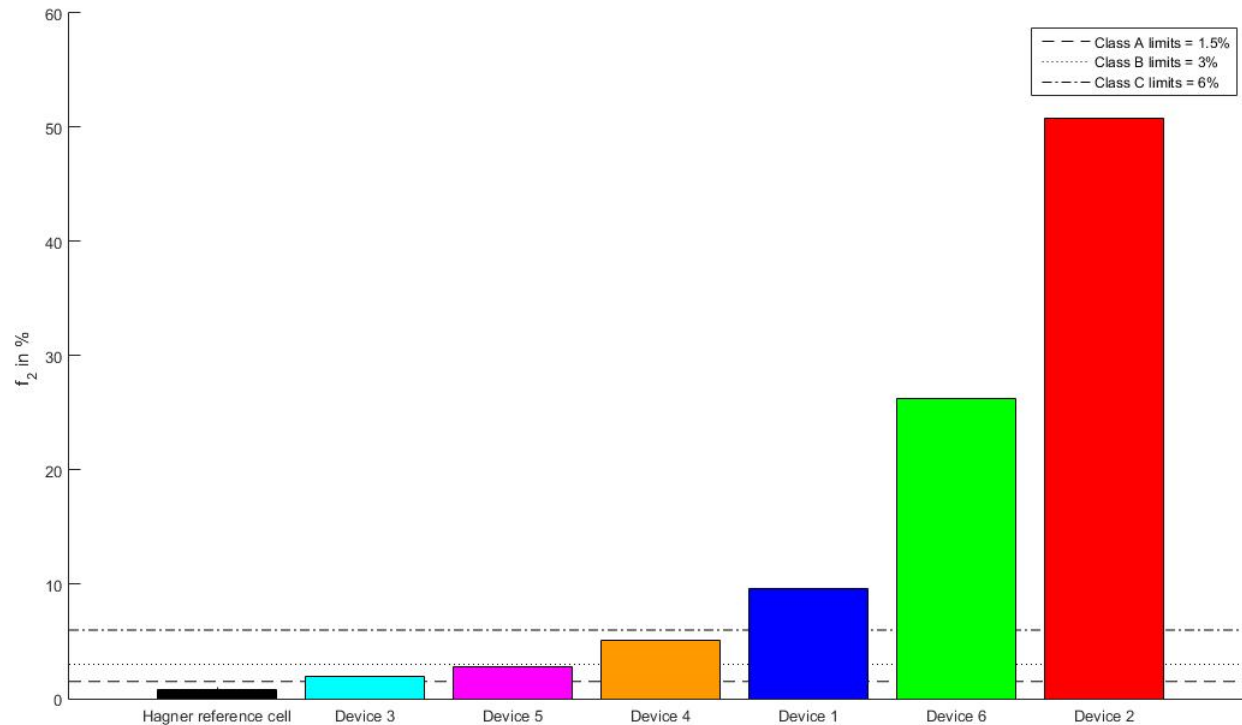




Indexen



$$f_2(\varphi) = \int_{0^\circ}^{80^\circ} |f_2(\varepsilon, \varphi)| * \sin(2\varepsilon) d\varepsilon$$

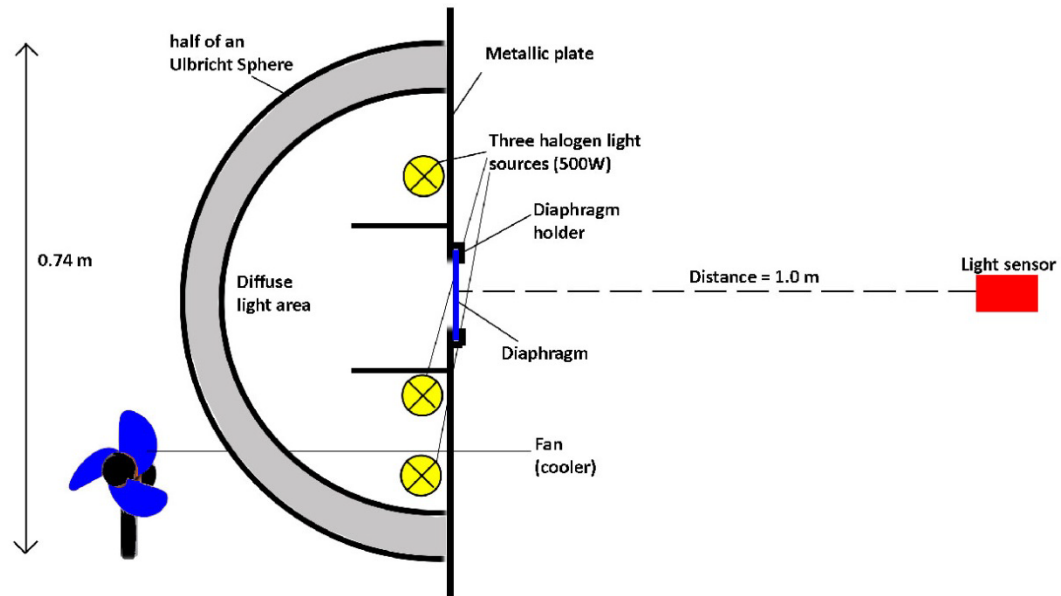


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➤ Lineariteitsindex (f_3)

- Bol van Ulbricht ($0 < E_{\text{ref}} < 250 \text{ lx}$)



Indexen

➤ Lineariteitsindex (f_3)

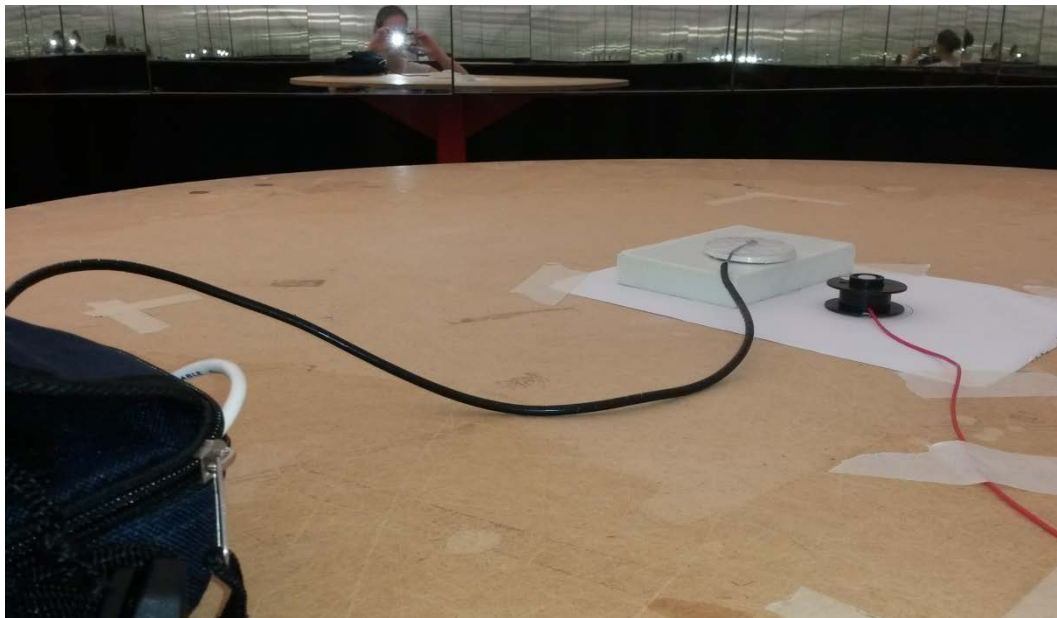
- Bol van Ulbricht ($0 < E_{\text{ref}} < 250 \text{ lx}$)
- DL kamer met kokers ($0 < E_{\text{ref}} < 2100 \text{ lx}$)



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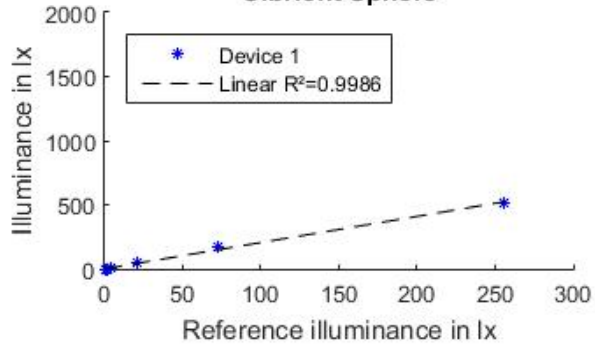
➤ Lineariteitsindex (f_3)

- Bol van Ulbricht ($0 < E_{\text{ref}} < 250 \text{ lx}$)
- DL kamer met kokers ($0 < E_{\text{ref}} < 2100 \text{ lx}$)
- DL Kamer zonder kokers ($0 < E_{\text{ref}} < 12500 \text{ lx}$)

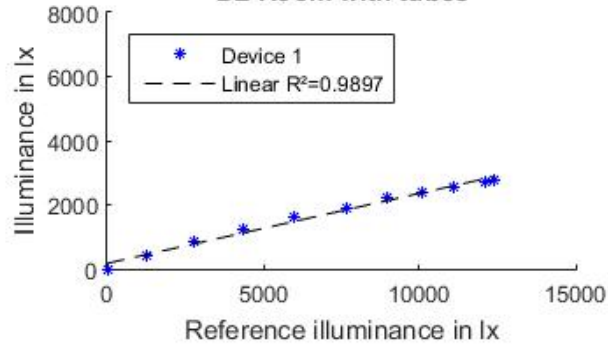


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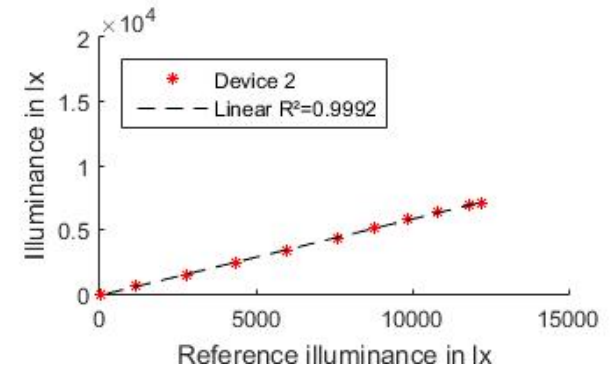
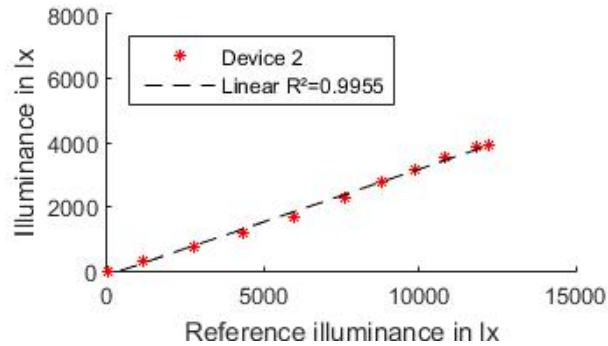
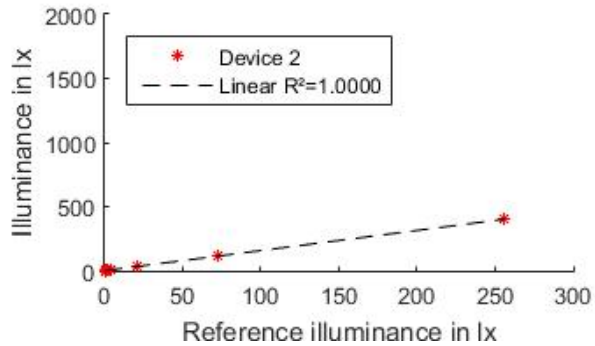
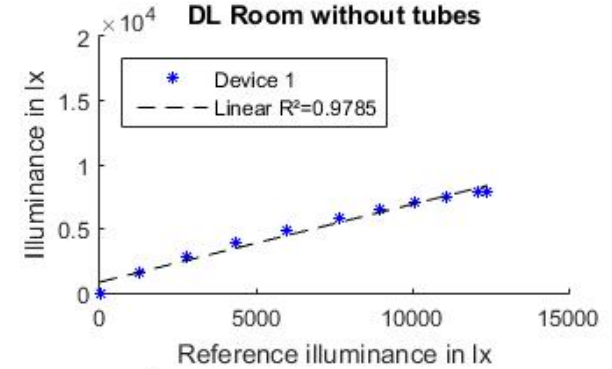
Ulbricht Sphere



DL Room with tubes

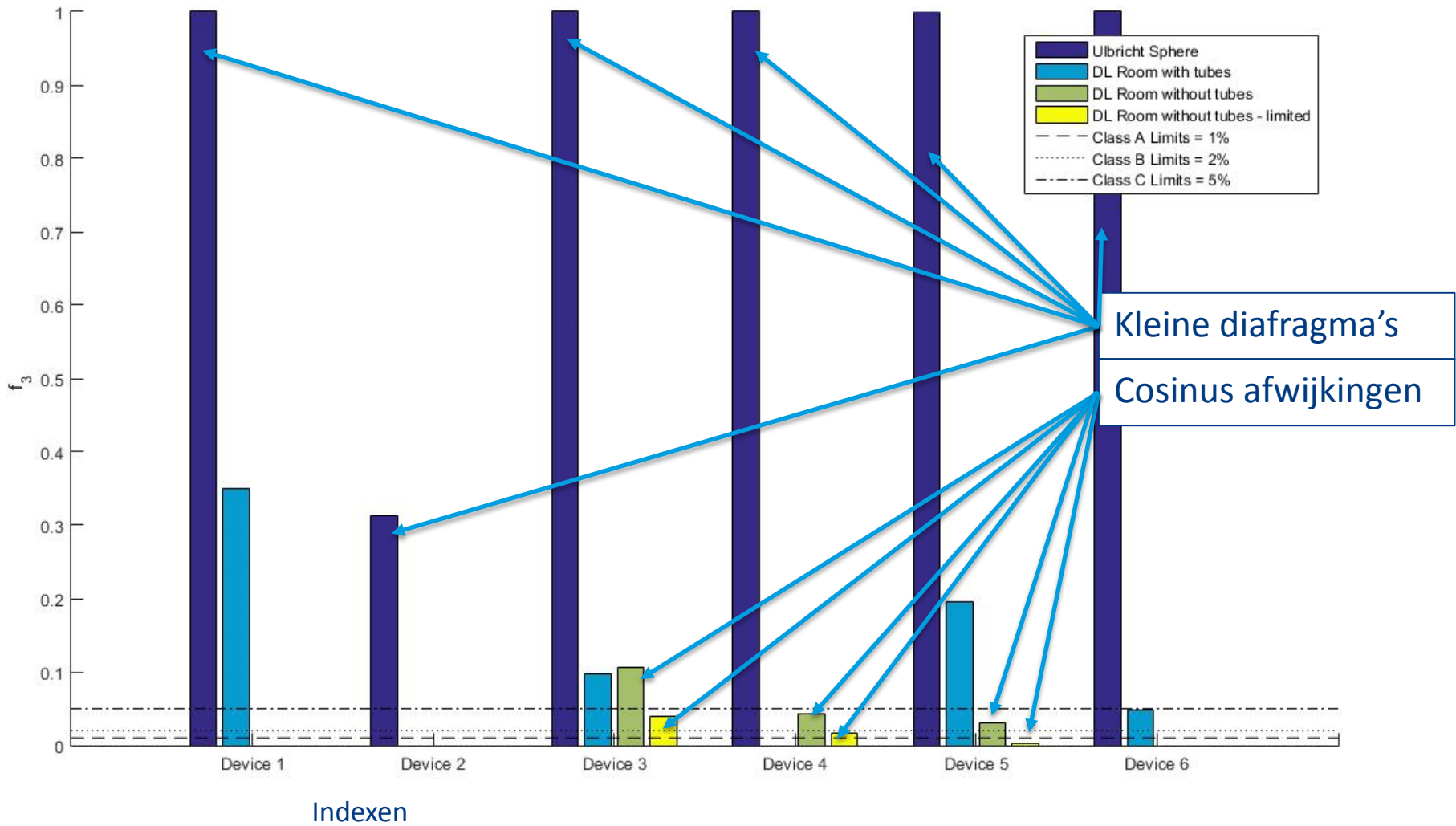


DL Room without tubes

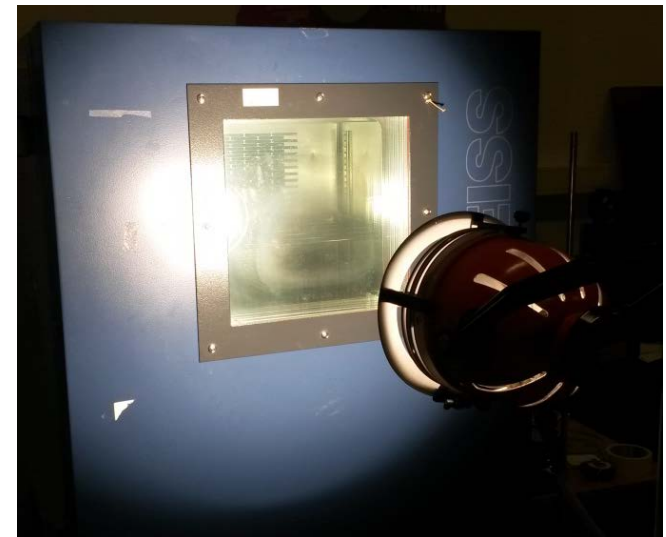
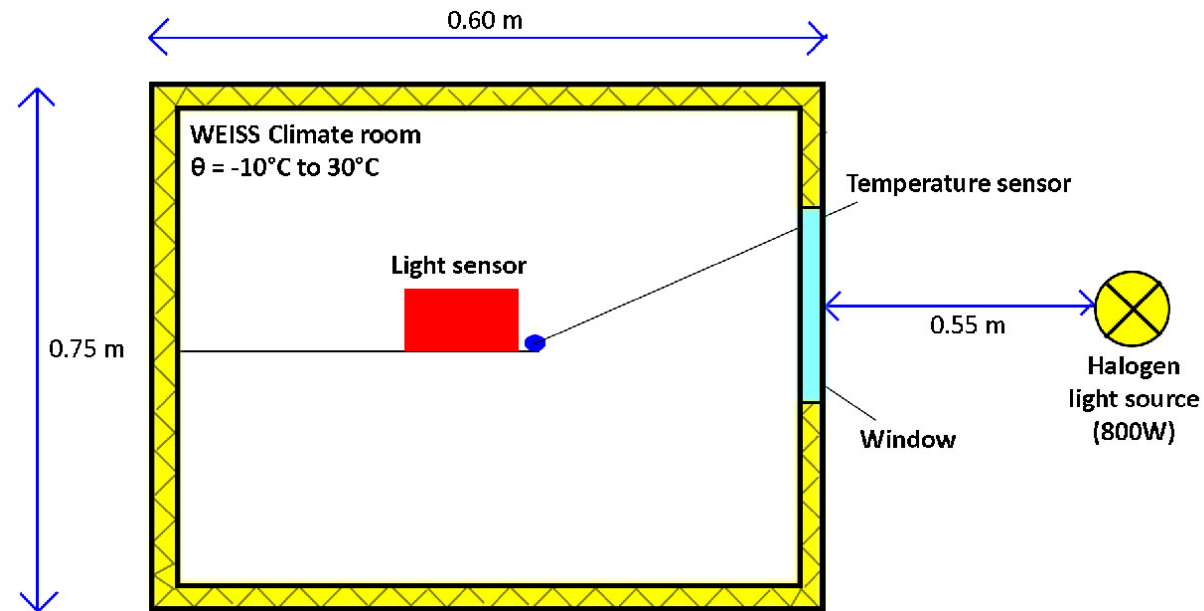


Indexen

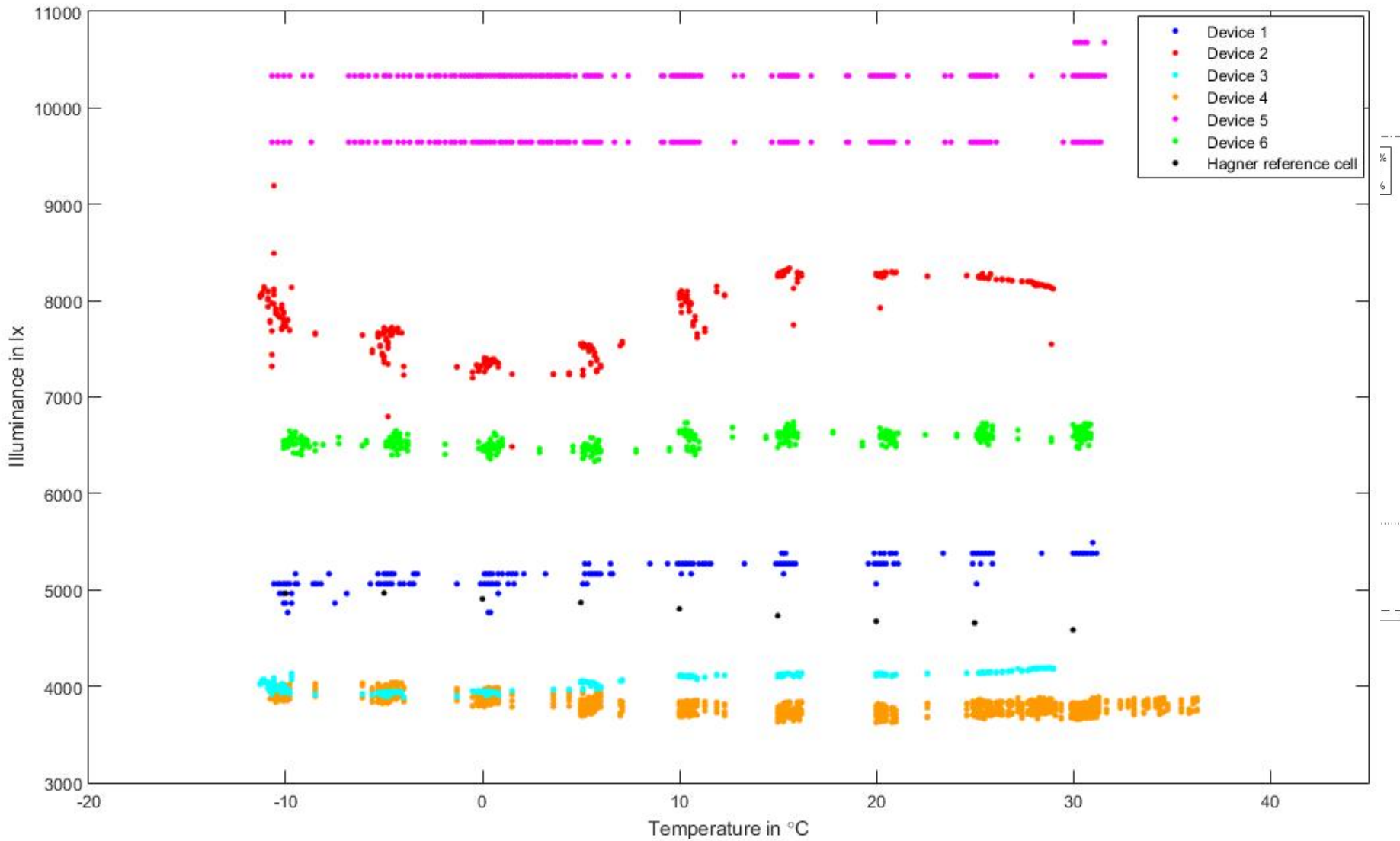




➤ Temperatuurindex ($f_{6,T}$)



Indexen

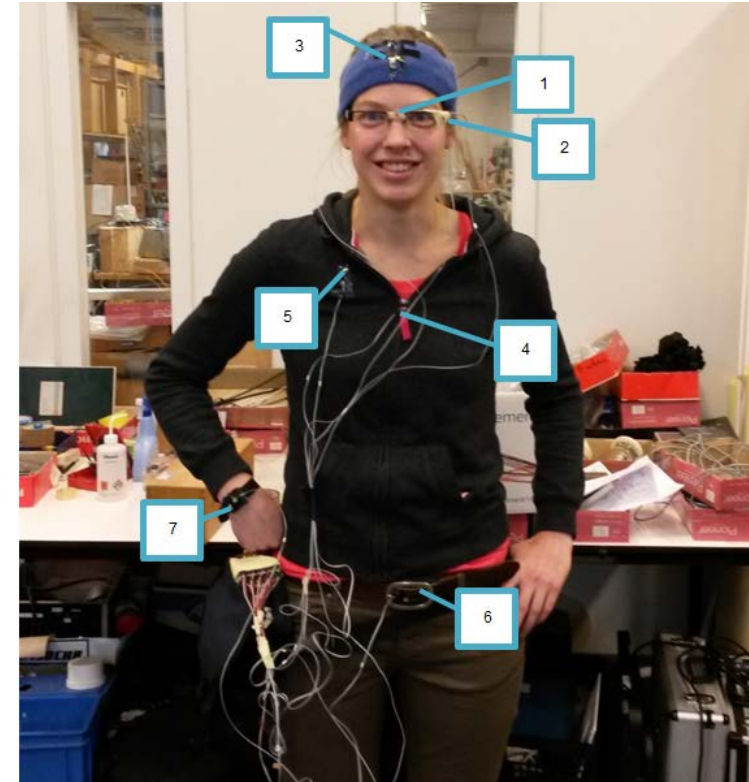
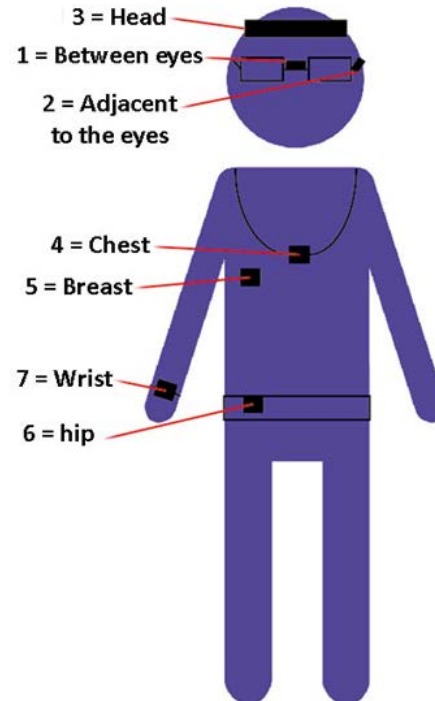


Indexen



Discussie

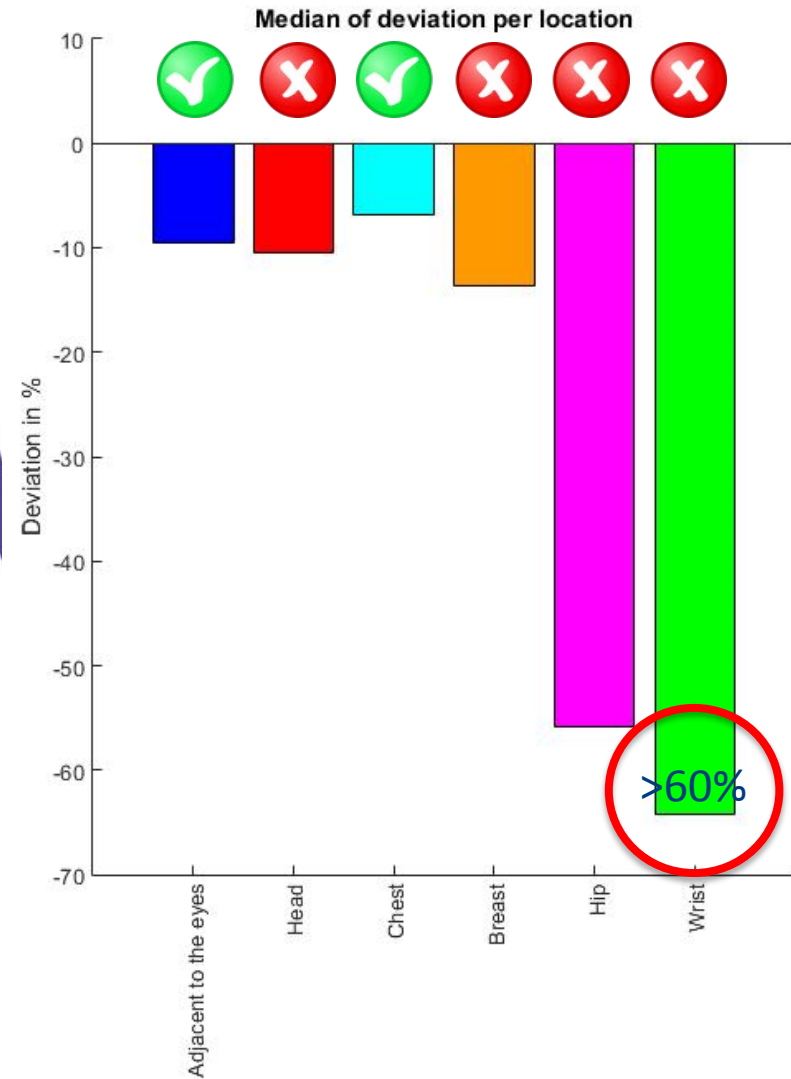
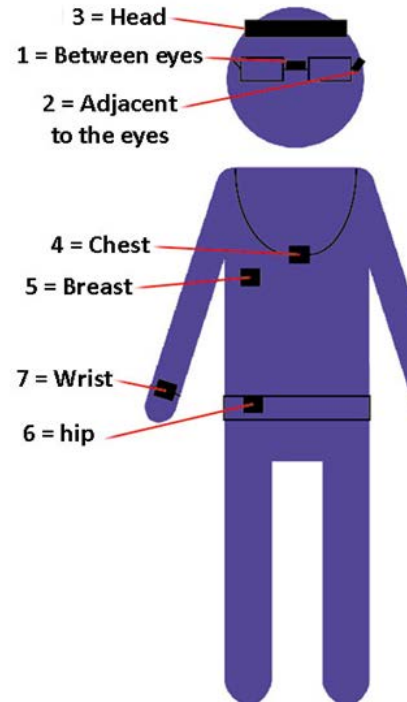
- Locaties op lichaam
- Niet alle instrumenten
- Niet alle indexen



Discussie

Discussie

- Locaties op lichaam
- Niet alle instrumenten
- Niet alle indexen



Discussie

Conclusie

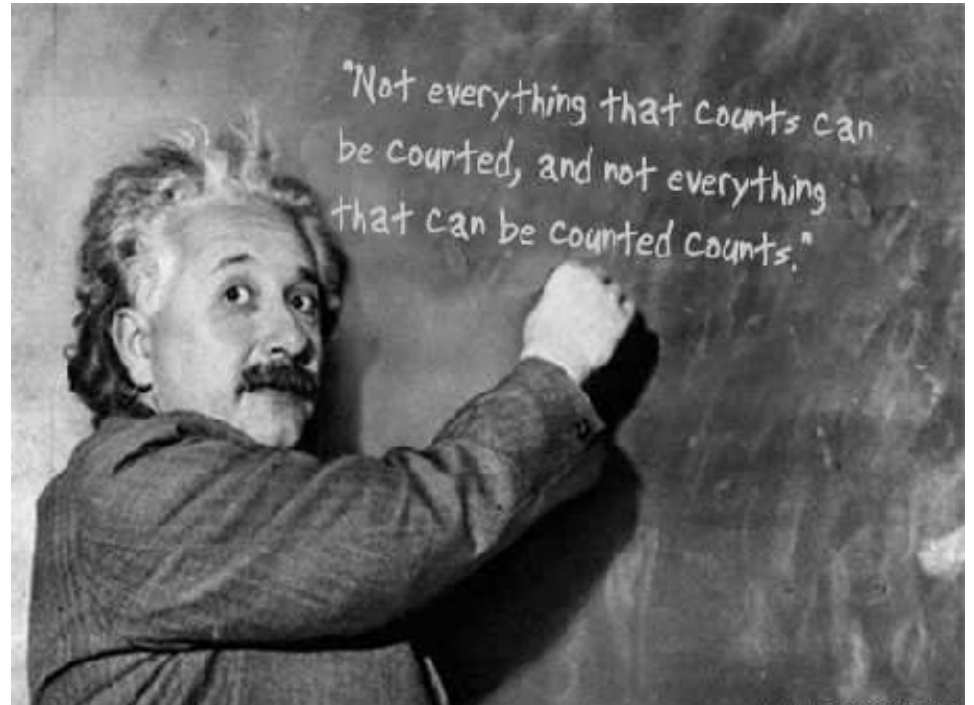
	Device 1	Device 2	Device 3	Device 4	Device 5	Device 6	Reference
f_2	D	D	B	C	B	D	A
f_3	DD--	D	DDDC	D-CB	DDCA	D	-
$f_{6,T}$	A	B	A	A	-	A	B

- Veel en grote verschillen
- Locatie instrument heeft ook grote invloed op metingen

Conclusie

Aanbevelingen

- Houd rekening met de afwijkingen
- Keuze instrument van belang



Aanbevelingen



Bedankt!

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j.v.duijnhoven1@tue.nl

Vragen