

# Particle therapy masterclass - Torino

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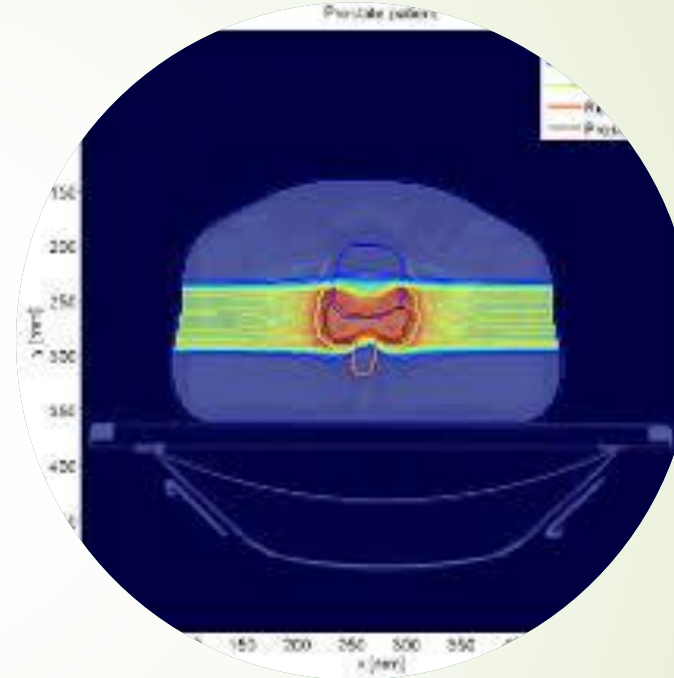
CITTA' della SALUTE e DELLA SCIENZA - AIFM

**Elena gallio**



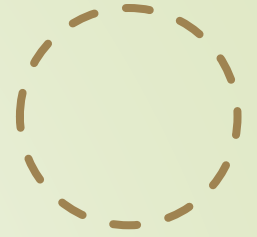
# 3 EXERCICES

- **BOXPHANTOM**
- **TG119**
- **PROSTATE**



# BOX PHANTOM

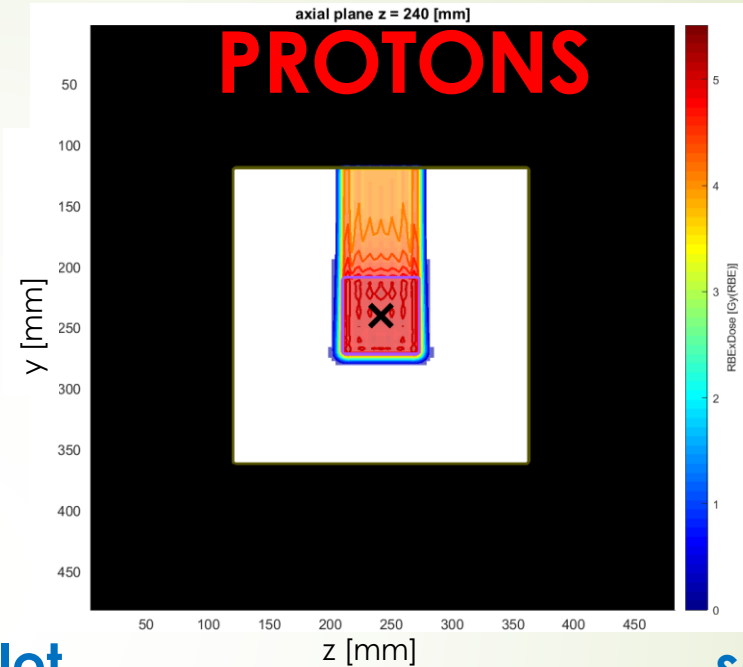
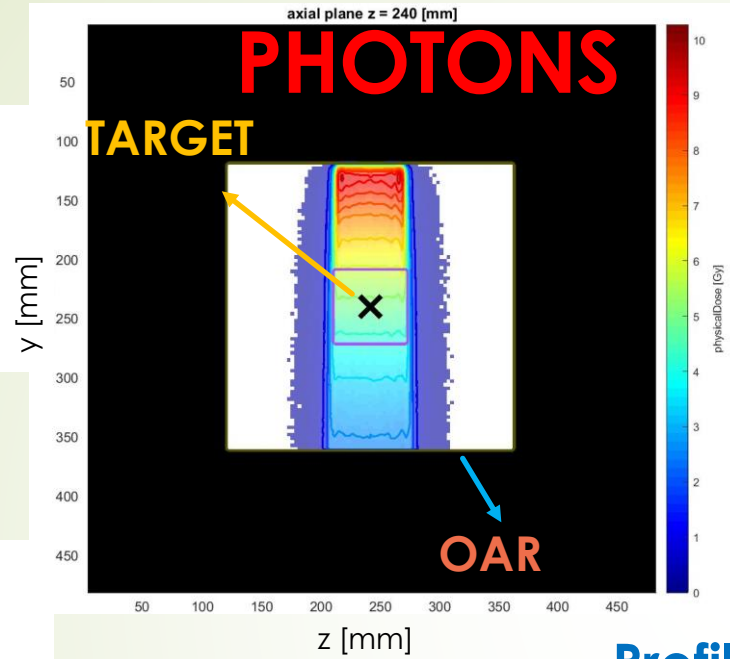
## Dose distribution



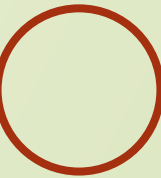
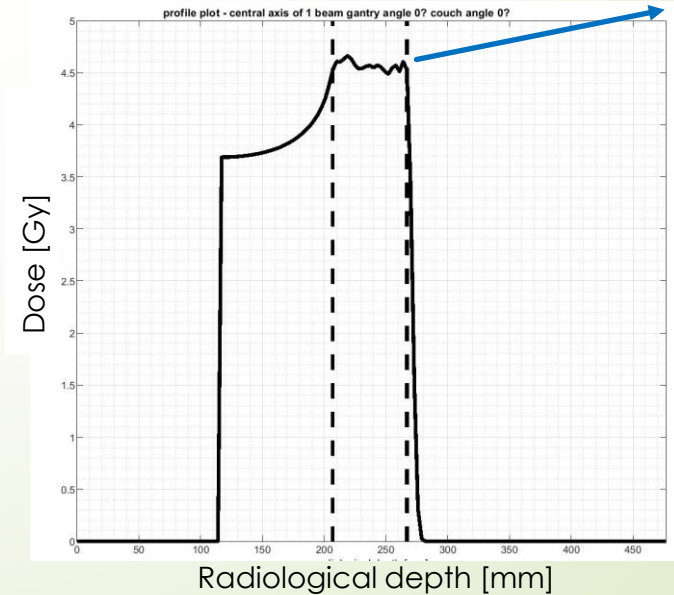
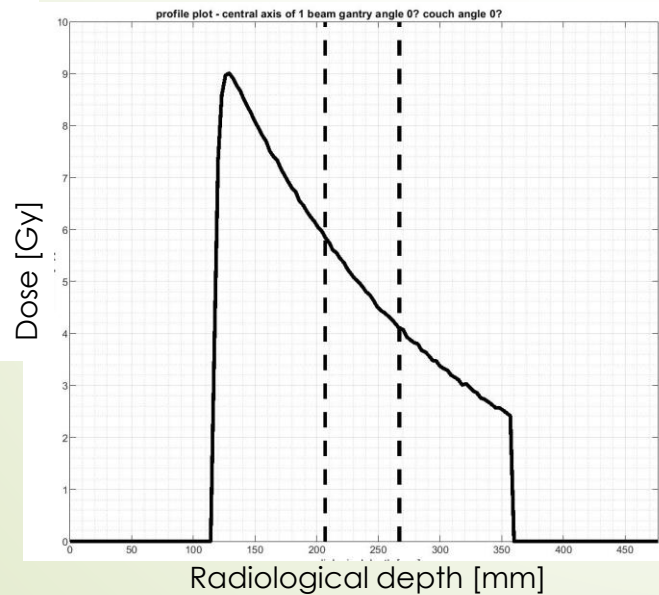
Gantry angles:  $0^\circ$

### Constraints:

- Dose to the **target** = 5 Gy
- Maximum dose to the **OAR** = 2 Gy



### Profile plot



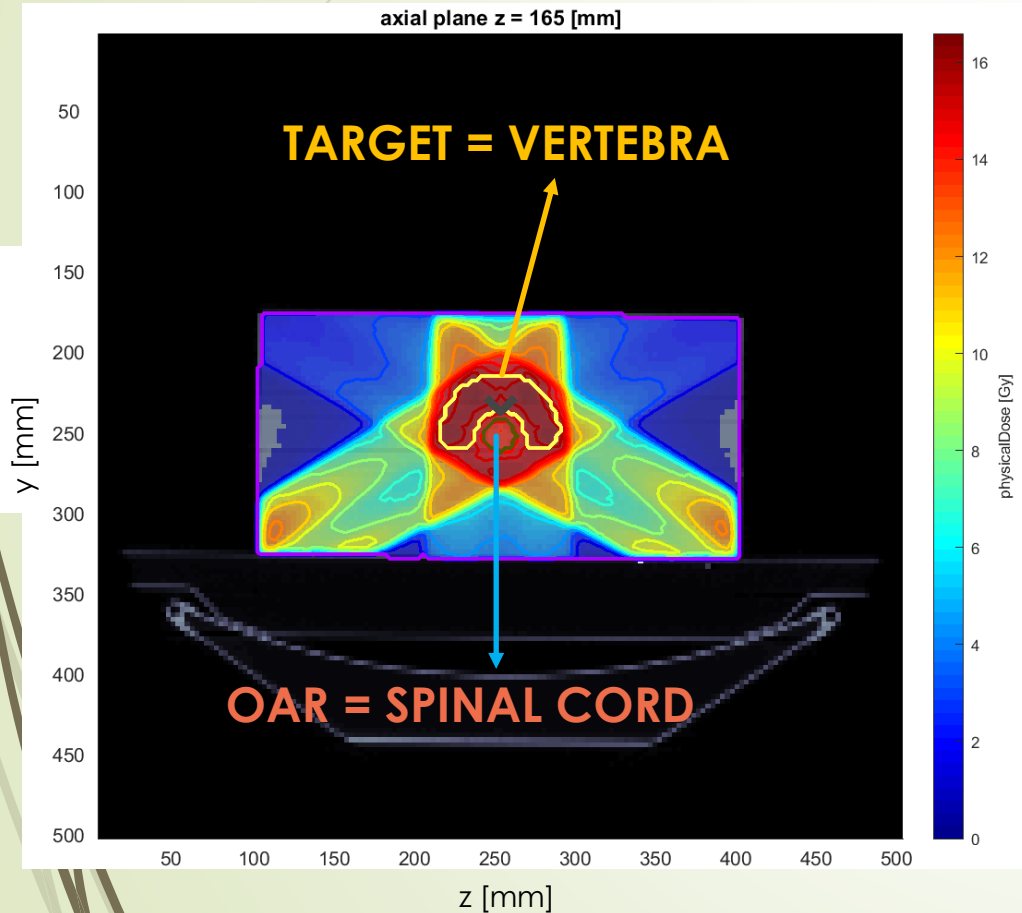
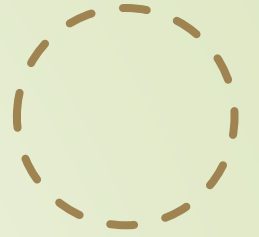
# PHANTOM TG 119

Constraints:

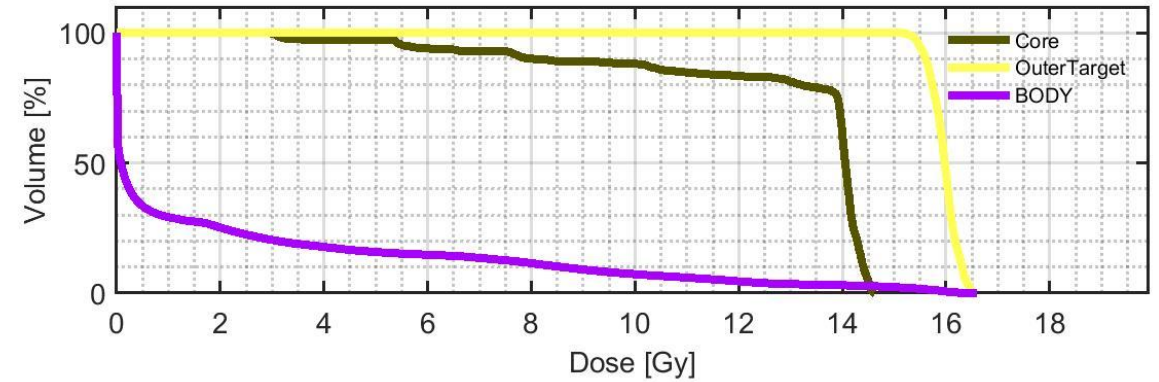
## PHOTONS

Gantry angles: 0° - 120° - 240°

- Dose to the **target** = 16 Gy
- Maximum dose to the **OAR** = 14 Gy



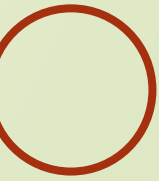
## DVH



	max	min	mean	std
Core	14.6181	2.9539	12.9918	2.7044
OuterTarget	16.5965	15.0397	15.9609	0.2628
BODY	16.5965	0	2.0576	3.9062

**X** > 14 Gy

✓ ~ 16 Gy



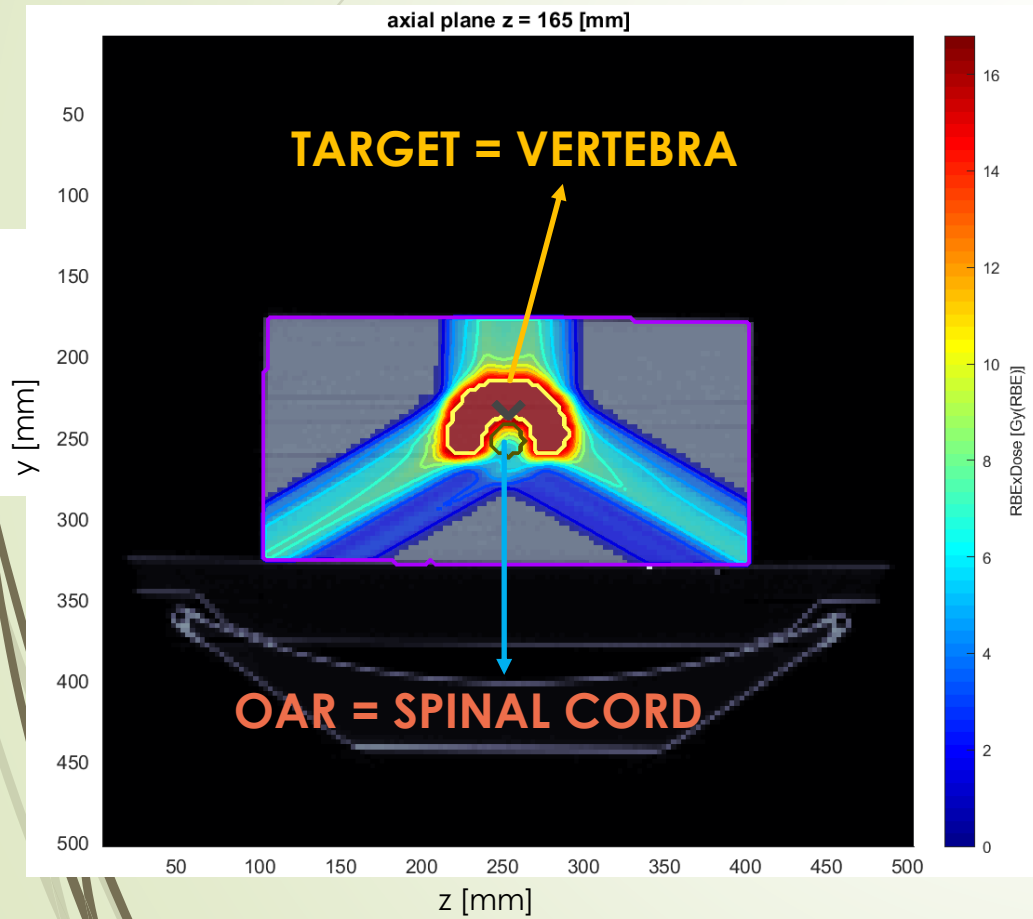
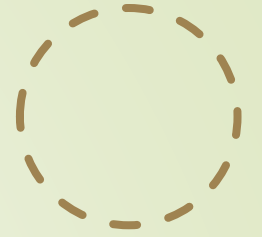
# PHANTOM TG 119

Constraints:

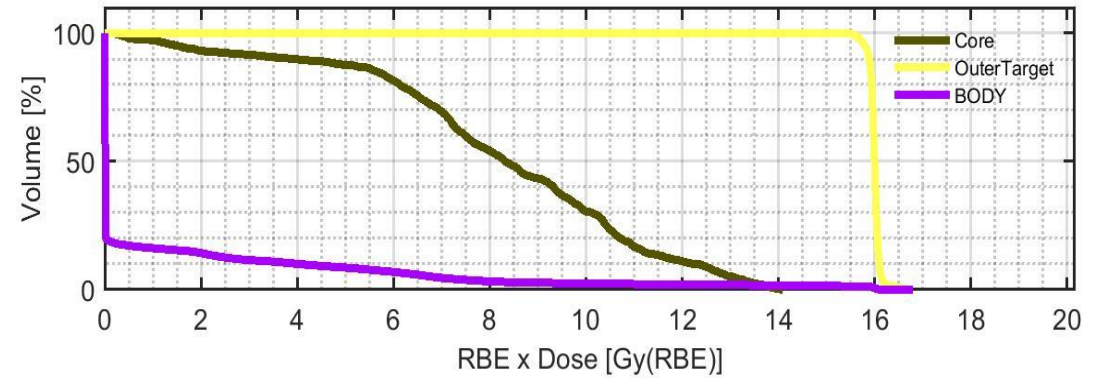
## PROTONS

Gantry angles: 0° - 120° - 240°

- Dose to the **target** = 16 Gy
- Maximum dose to the **OAR** = 14 Gy



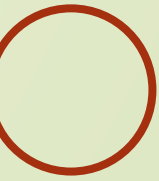
## DVH



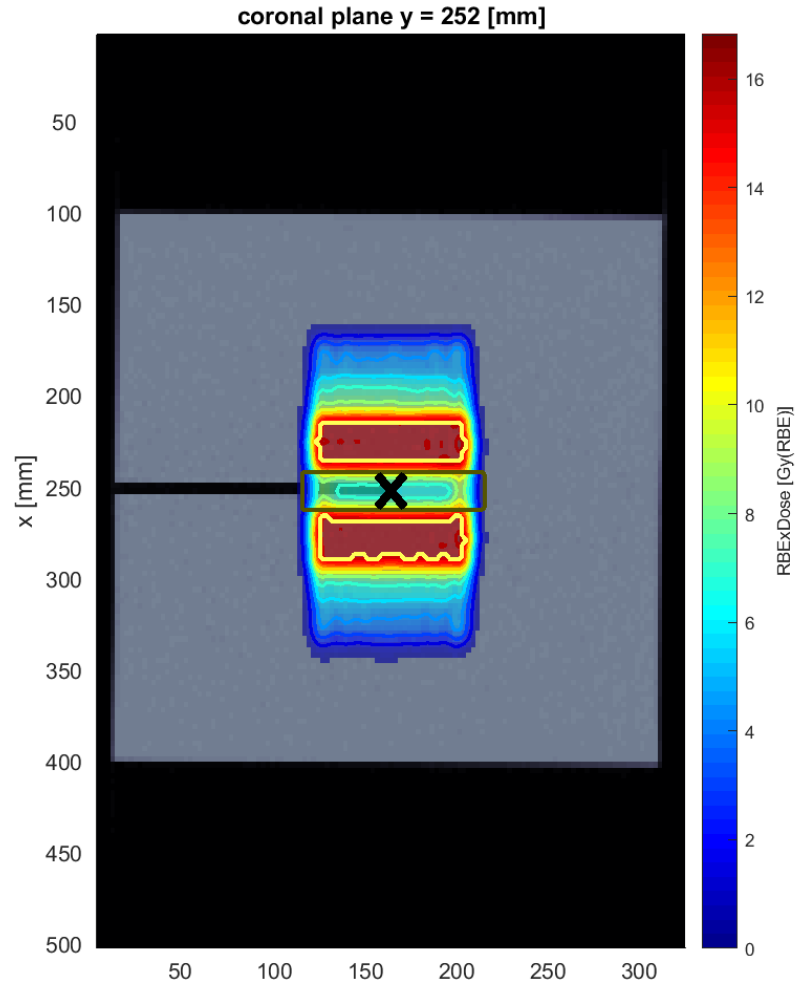
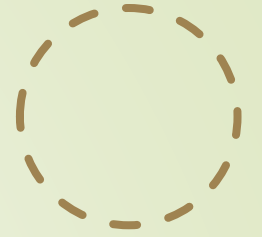
	max	min	mean	std
Core	14.0906	0.1866	8.2157	3.1204
OuterTarget	16.8031	15.2736	15.9921	0.1235
BODY	16.8031	0	0.9972	2.8002

✓ ~ 14 Gy

✓ ~ 16 Gy

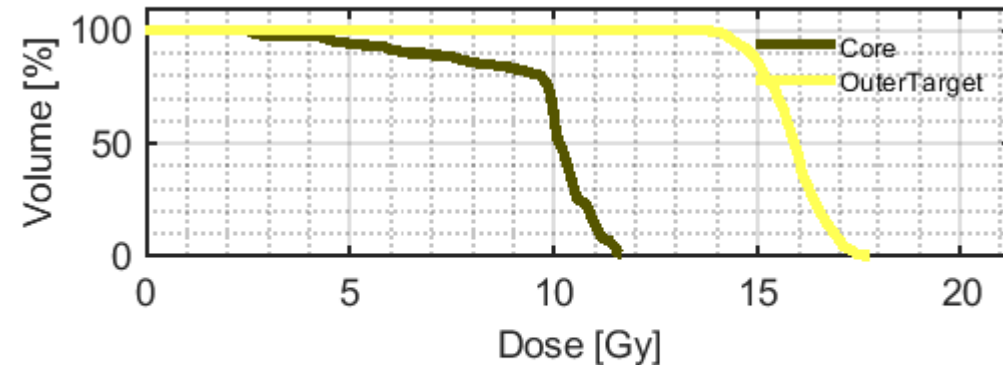


# MINIMUM DOSE TO SPINAL CORD

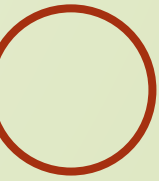


- Dose to the **target** = 16 Gy
- Maximum dose to the **OAR** = 12 Gy

Best optimization with max Dose OAR = 12 Gy



	mean	std	max	min
Core	9.6510	1.9433	11.6942	2.4038
OuterTarget	15.8630	0.7759	17.7544	13.1765



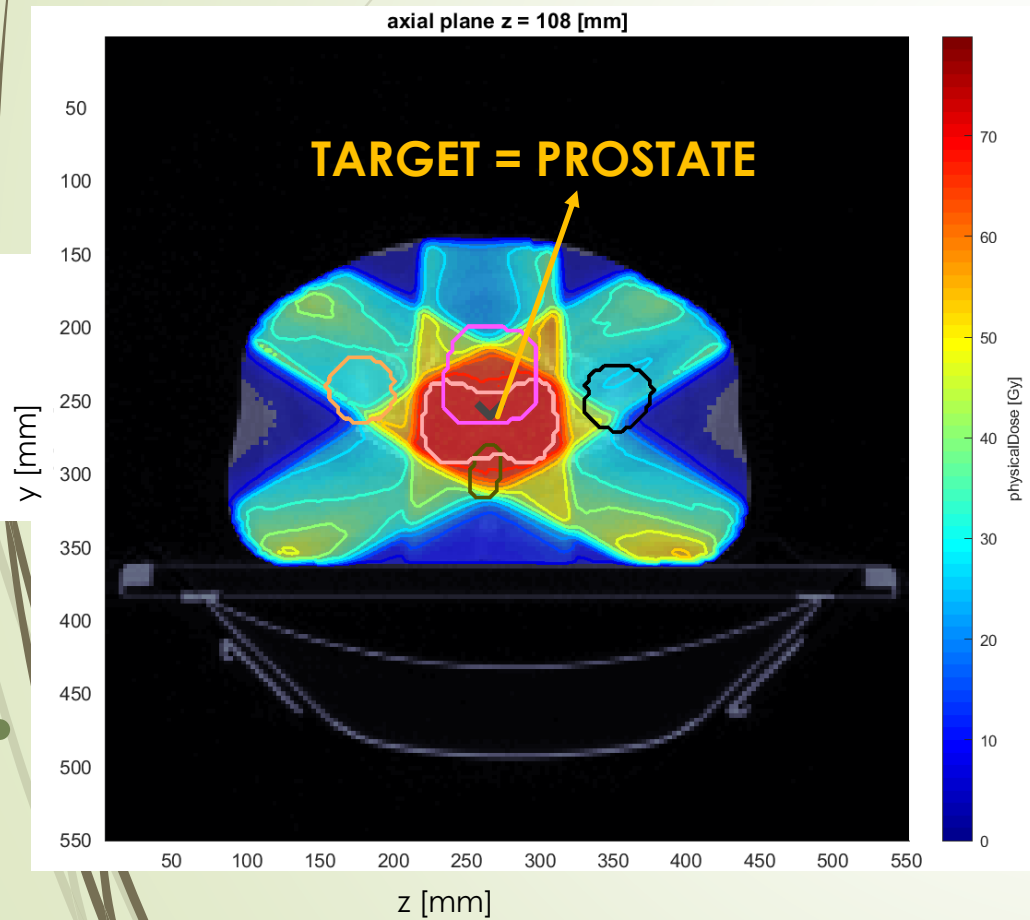
# PROSTATE

Constraints:

- Dose to the **target** = 68 Gy

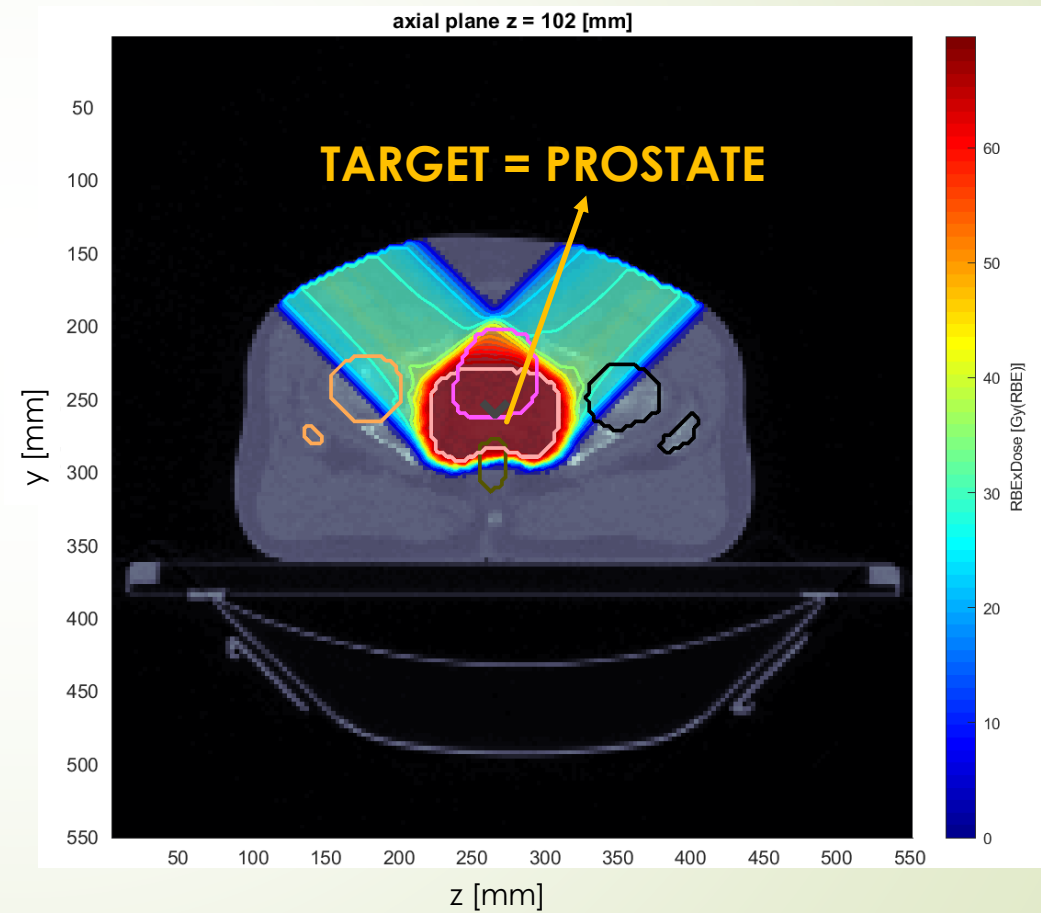
## PHOTONS

Gantry angles: 0° - 60° - 120° - 240° - 300°



## PROTONS

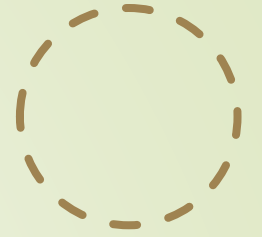
Gantry angles: 45° - 315°



# PROSTATE

Constraints:

- Dose to the **target** = 68 Gy

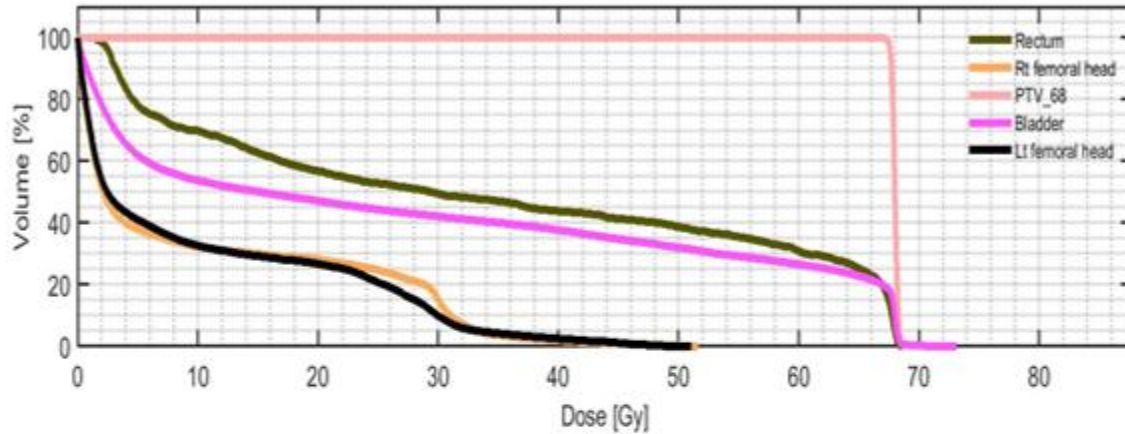


## PHOTONS

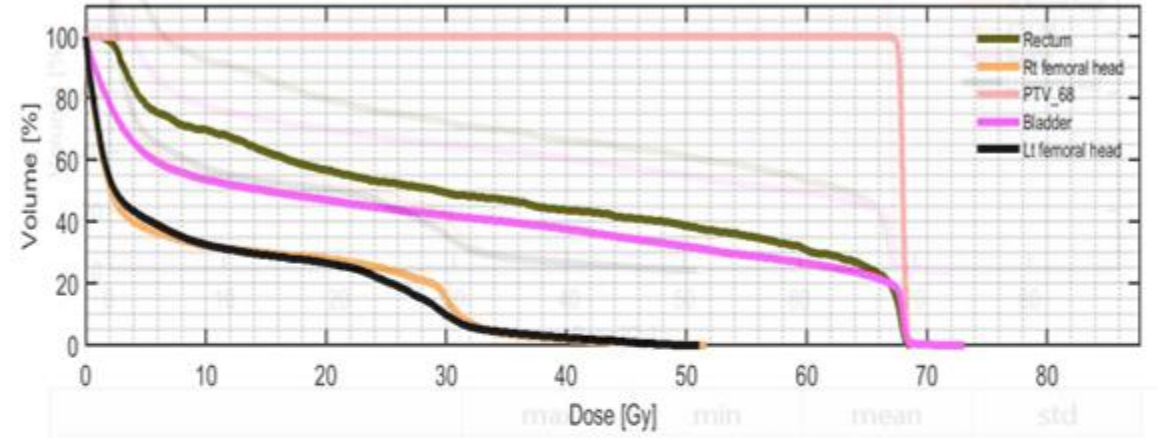
Gantry angles: 0° - 60° - 120° - 240° - 300°

## PROTONS

Gantry angles: 45° - 315°



	max	min	mean	std
Rectum	68.6380	1.1304	34.2486	26.4109
Rt femoral head	51.6354	0	10.4117	13.3191
PTV_68	68.9003	66.6443	67.9984	0.2314
Bladder	73.1400	0	28.4057	27.8499
Lt femoral head	51.1196	0	10.1726	12.7354



	max	min	mean	std
Rectum	68.6380	1.1304	34.2486	26.4109
Rt femoral head	51.6354	0	10.4117	13.3191
PTV_68	68.9003	66.6443	67.9984	0.2314
Bladder	73.1400	0	28.4057	27.8499
Lt femoral head	51.1196	0	10.1726	12.7354







## SCHOOLS

*Liceo Vasco Beccaria Govone*  
*Edoardo Agnelli*  
*IIS Copernico Luxemburg*  
*Liceo scientifico Maria Curie*  
*Edoardo Agnelli*  
*L.S.GALILEO FERRARIS*  
*Liceo Classico Vittorio Alfieri*  
*Liceo Avogadro Biella*  
*Liceo Augusto Monti di Chieri*  
*IIS Primo Levi*  
*Convitto Nazionale Umberto I*  
*Liceo Valsalice*  
*Liceo Carlo Cattaneo*  
*ITIS Amedeo Avogadro*  
*I.S A.Einstein*

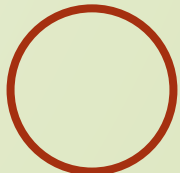


## 32 STUDENTS



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Filippo Salmi  
Dorotea Maffei

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Pietro Perio  
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Peter Cameron Curry  
Luca Saccotelli  
Matteo Maggiorotti  
Riccardo Tollemeto  
Tommaso Carè



Thank you for  
your attention

