



# Particle therapy masterclass

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THERAPY PLANING FOR LIVER AND HEAD\_AND\_NECK  
SAINT PETERSBURG STATE UNIVERSITY




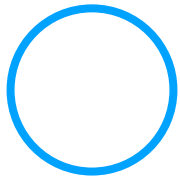
KARINA KORABELSHCHIKOVA & IVAN KAZARIN  
ON BEHALF OF 13 PERSONS







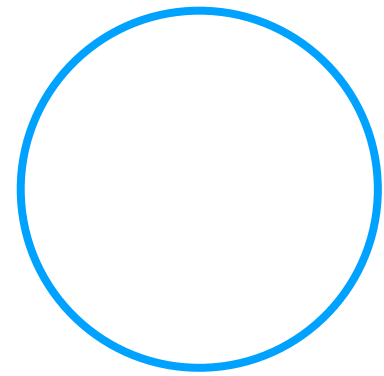
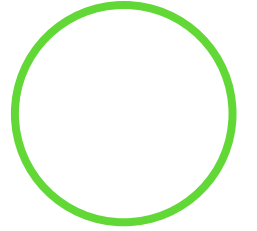
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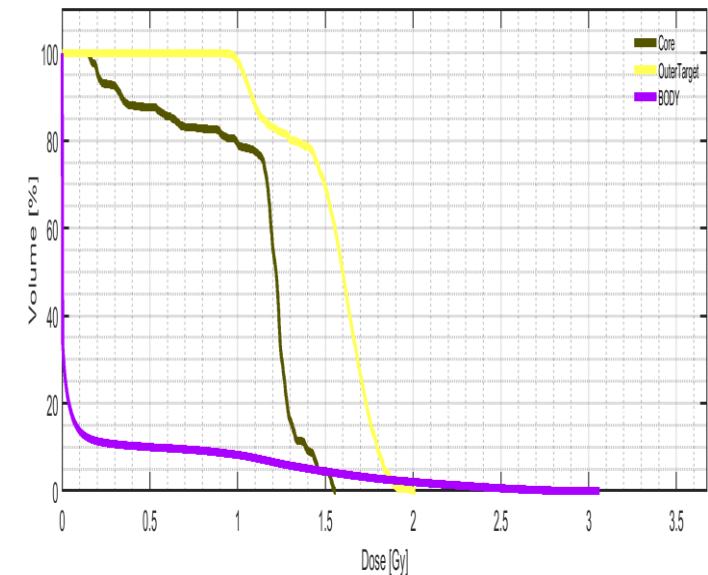
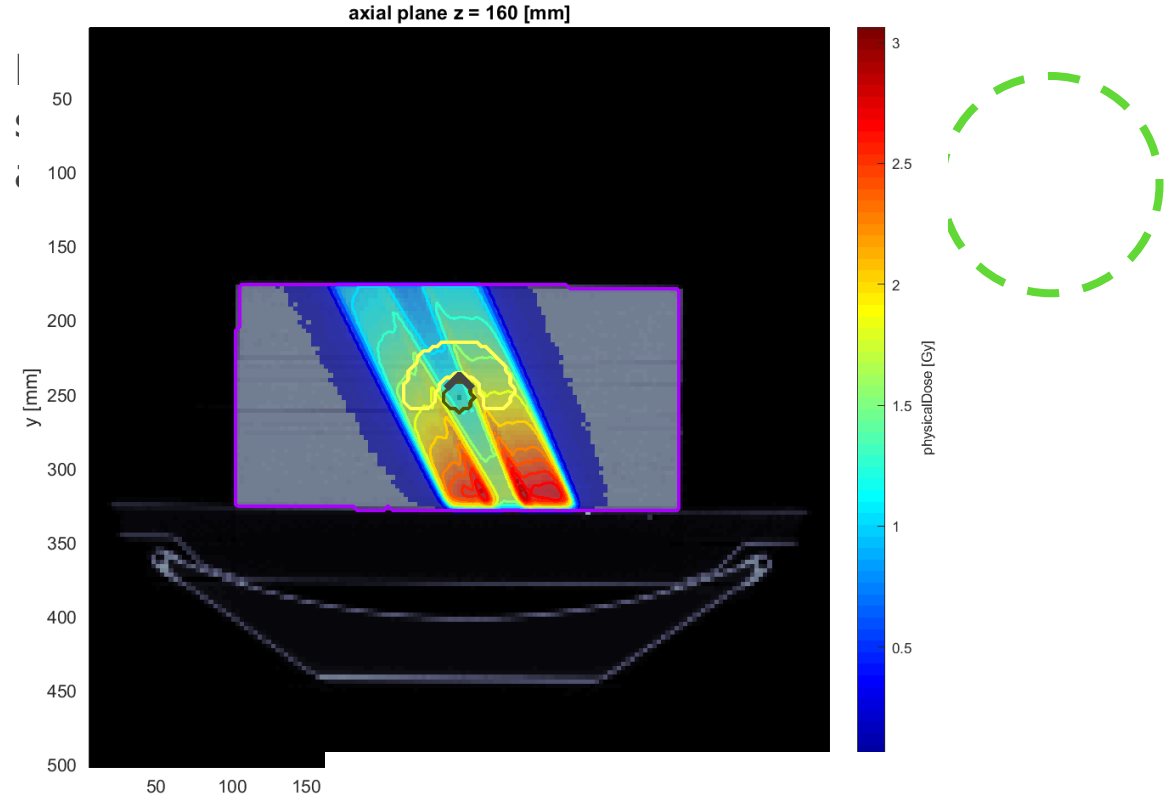
# C PHANTOM - GAMMA

C phantom is composed of the C-shaped target and cylindrical core (organ at risk)

The first choice of radiation type was photons

It left us with the unsatisfactory results

	max	min	mean	std
Core	1.5606	0.1379	1.0904	0.3602
OuterTarget	2.0145	0.8565	1.5341	0.2479
BODY	3.0635	0	0.1641	0.4817



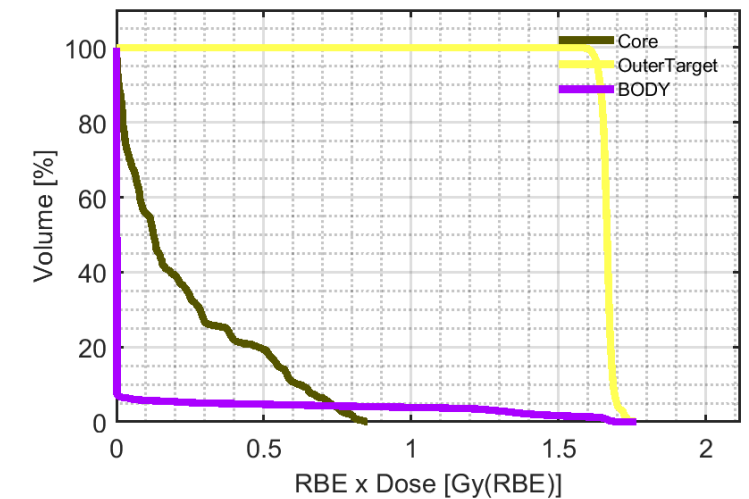
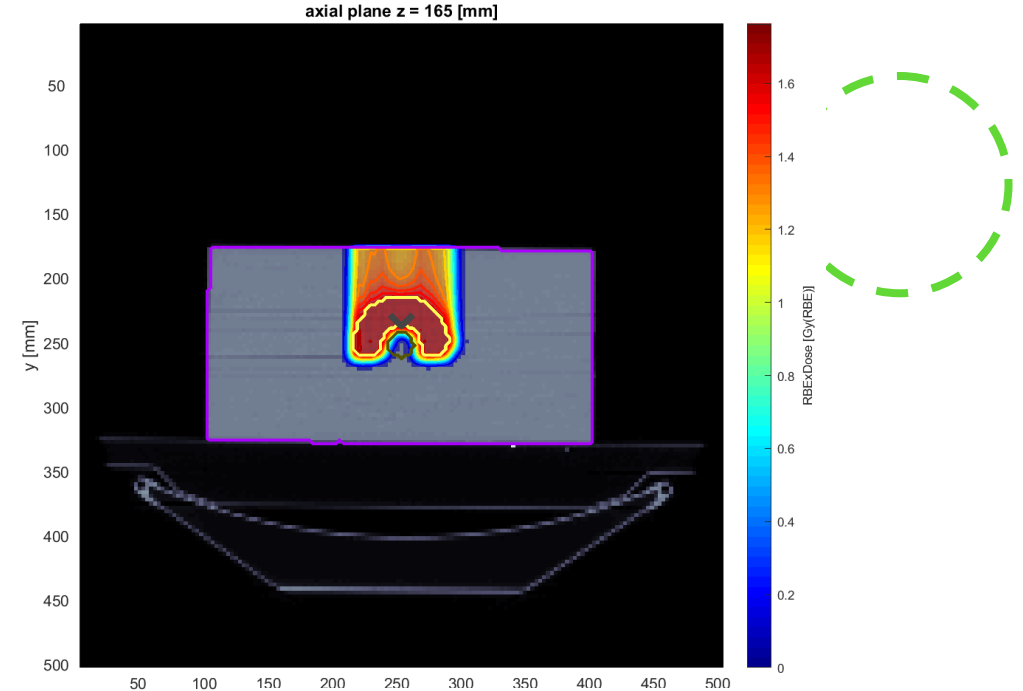


# C PHANTOM - PROTONS

The second choice of radiation type was protons

Effect on the C-shape is similar to the gamma case

Minimum dose on body and core was found

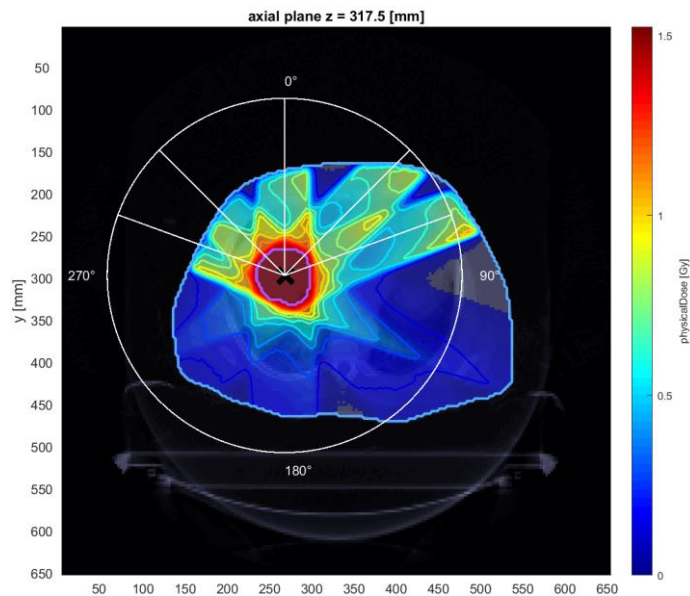


	max	min	mean	std
Core	0.8534	0	0.2232	0.2367
OuterTarget	1.7643	1.5513	1.6651	0.0206
BODY	1.7643	0	0.0653	0.2894

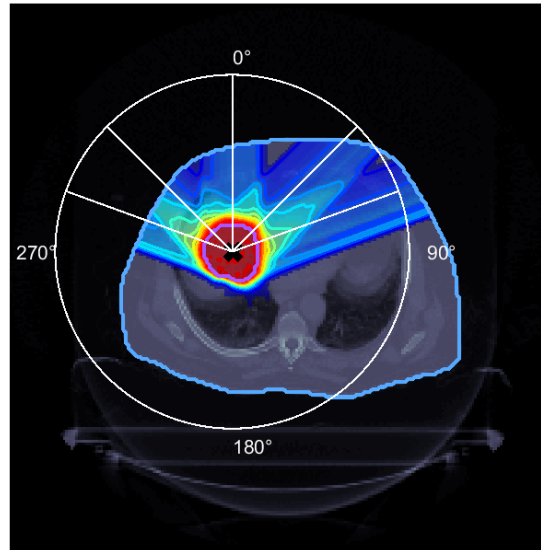


# COMPARISON FOR PHOTON AND PROTON THERAPY FOR LIVER

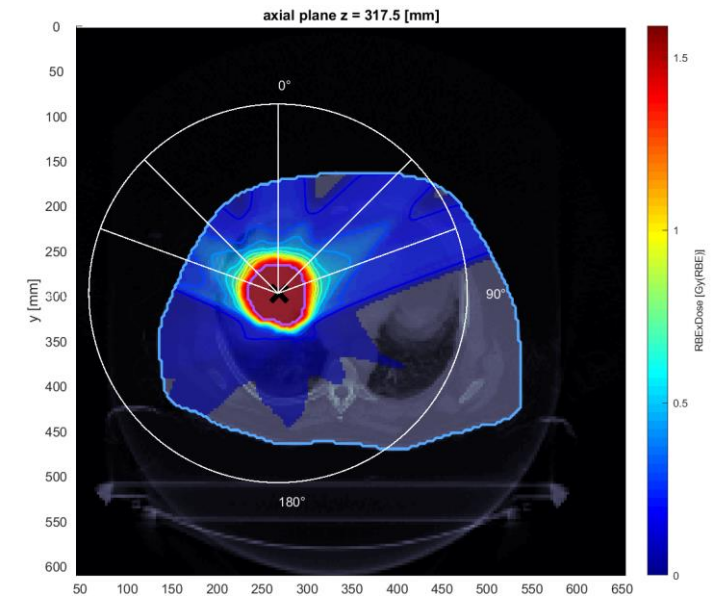
## PHOTON THERAPY



## PROTON THERAPY



## CARBON THERAPY



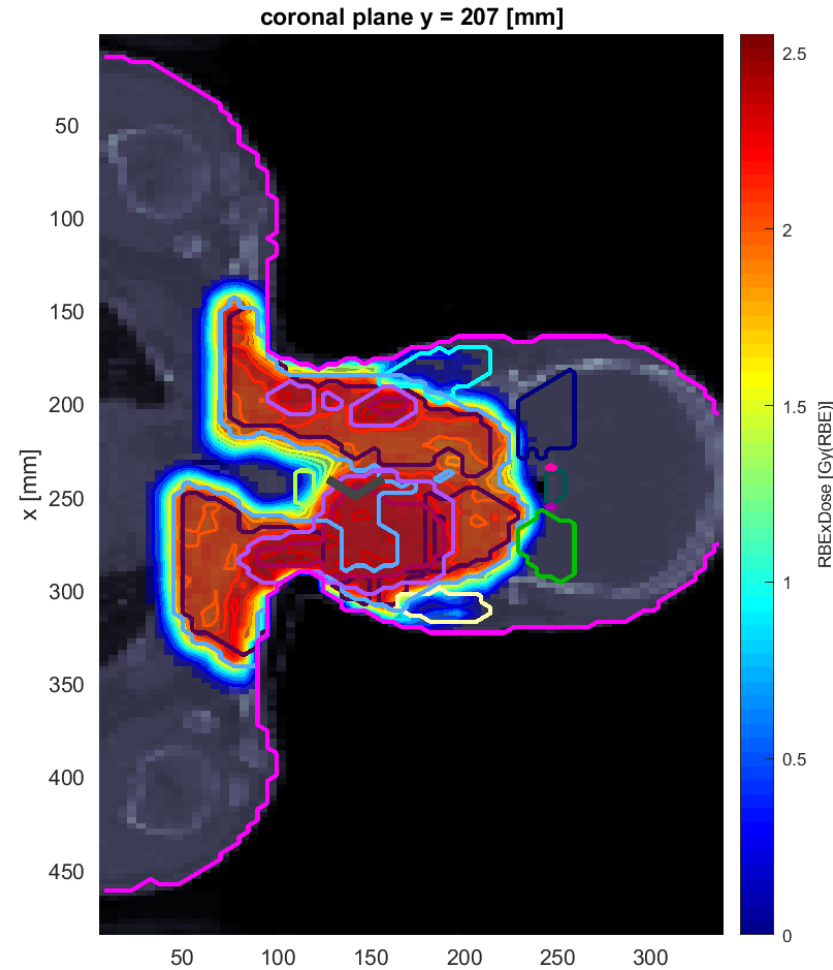
5 beams configuration for protons and carbons are much better than 5 beams of photons

Carbon ions provide less irradiation before the target but leave some traces in the area behind the target



# PROTON THERAPY FOR HEAD\_AND\_NECK

- 1) We were trying to find the optimal angle to minimize irradiation of the Paratoids
- 2) Single field of protons with the 180 degrees direction provides us with the reasonably good results



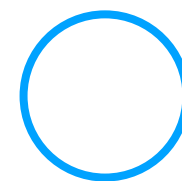




# CONCLUSION



The best result was obtained for protons and carbon ions







Thank you for  
your  
attention!

Спасибо!