

# Particle therapy masterclass

---

THERAPY PLANING OF HEAD AND NECK CANCER


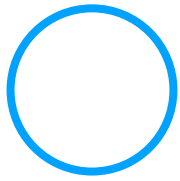
TU DORTMUND UNIVERSITY

C. M. BÄCKER ET AL.





# TABLE OF CONTENT

- ABSTRACT
  - LIVER CASE
  - COMPARISON FOR PHOTON AND PROTON THERAPY FOR LIVER CASE
  - COMPARISON FOR PROTON AND CARBON ION THERAPY LIVER CASE
  - CONCLUSION
- 
- 

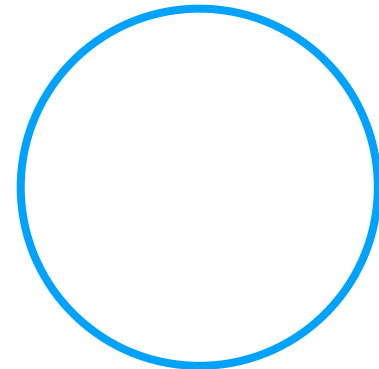
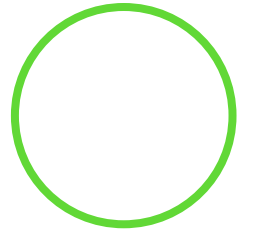
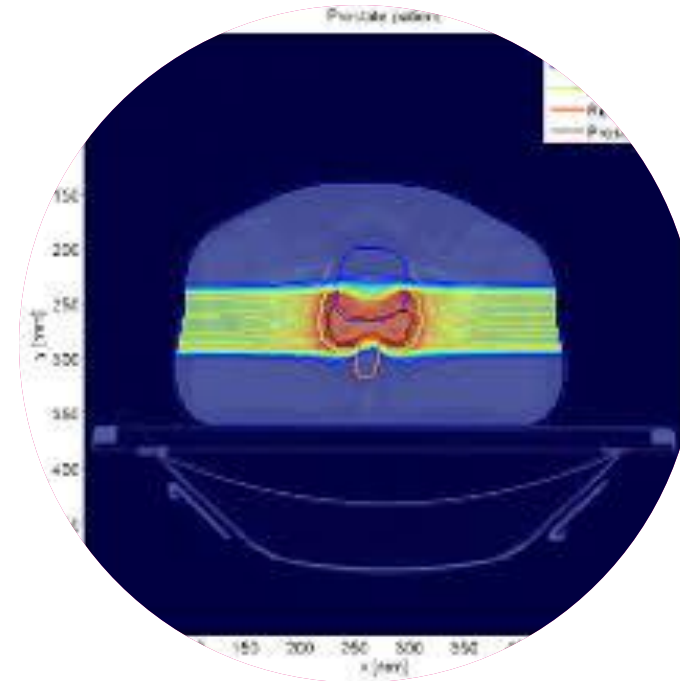


# ABSTRACT

We discussed the properties of photon and ion treatment with the C phantom. We choose different gantry angles and optimized the irradiation geomtry für photons.

Furthermore, we discussed the liver case with different treatment techniques and optimized irradiation geometries for the different modalities.

For ion treatment, less gantry positions are necessary compared to photon treatment.





# LIVER

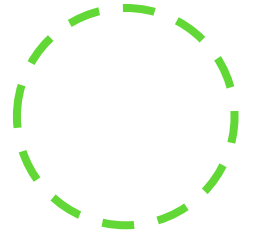


**Here you will list all the organs that are present in your case and list them as organs at risk (OAR), PTV, CTV, etc.) eg. prostate**

Heart	OAR
Skin	OAR
Myelon	OAR
PTV	Target
CTV	Target
GTV	Target



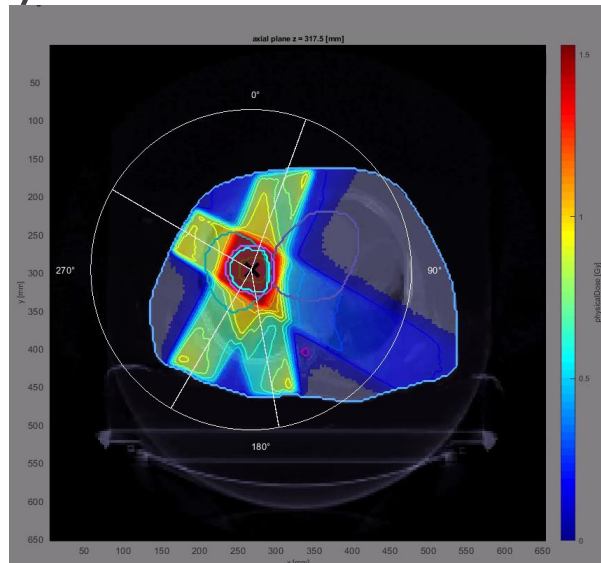
# COMPARISON FOR PHOTON AND PROTON THERAPY FOR LIVER



## PHOTON THERAPY

4 field geometry

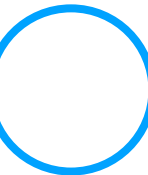
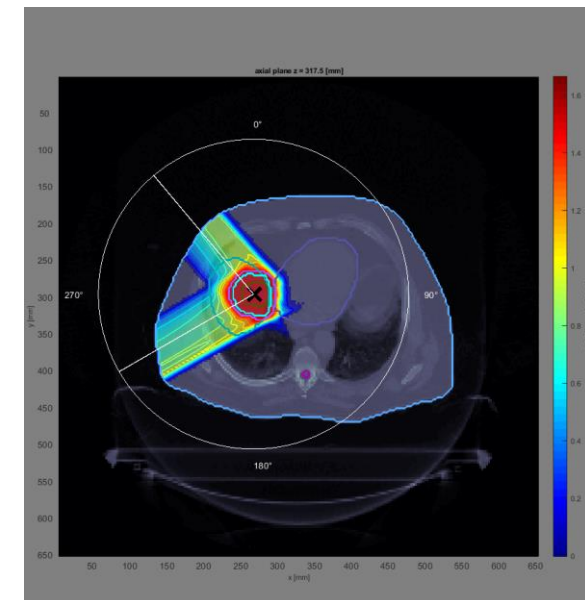
Avoid irradiation of heart and myelon



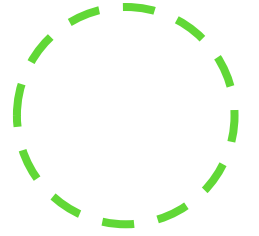
## PROTON THERAPY

2 field geometry

Nearly no dose in heart and myelon



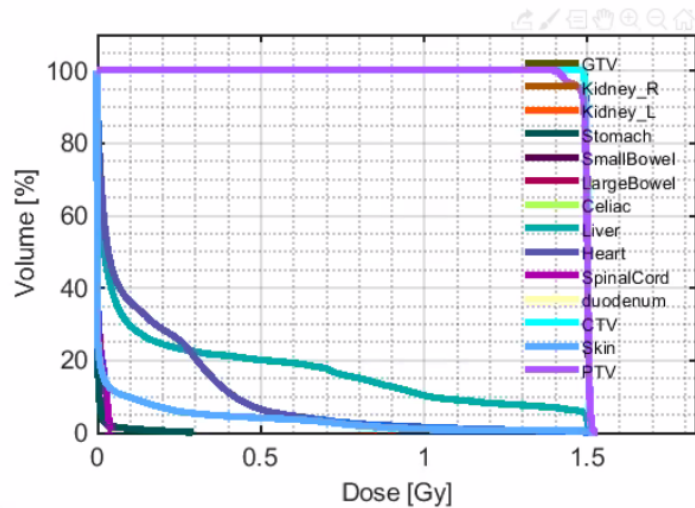
# COMPARISON FOR PHOTON AND PROTON THERAPY FOR LIVER



## PHOTON THERAPY

Good PTV coverage

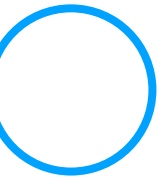
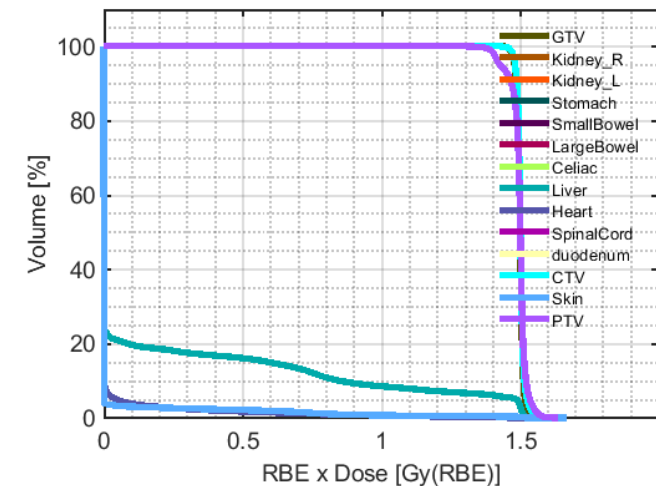
Low dose at heart, myelon and lung



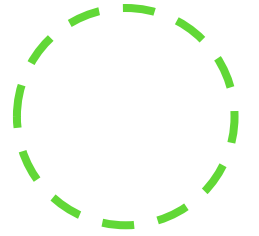
## PROTON THERAPY

Similar PTV coverage

Low dose in heart, no dose to myelon

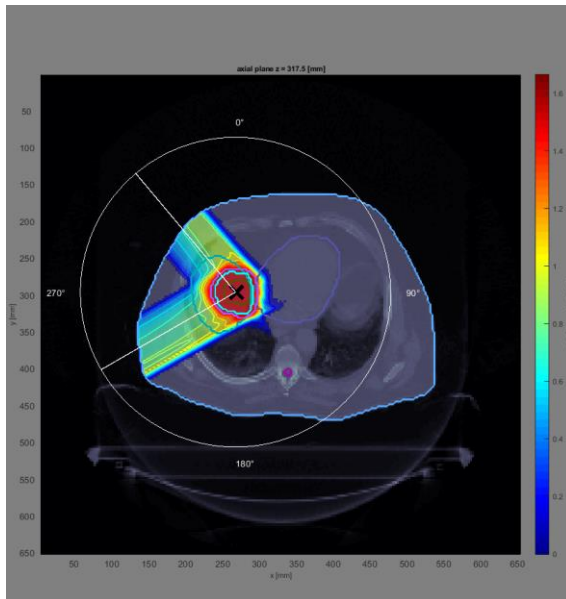


# COMPARISON FOR PROTON AND CARBON ION THERAPY FOR LIVER



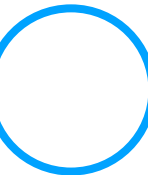
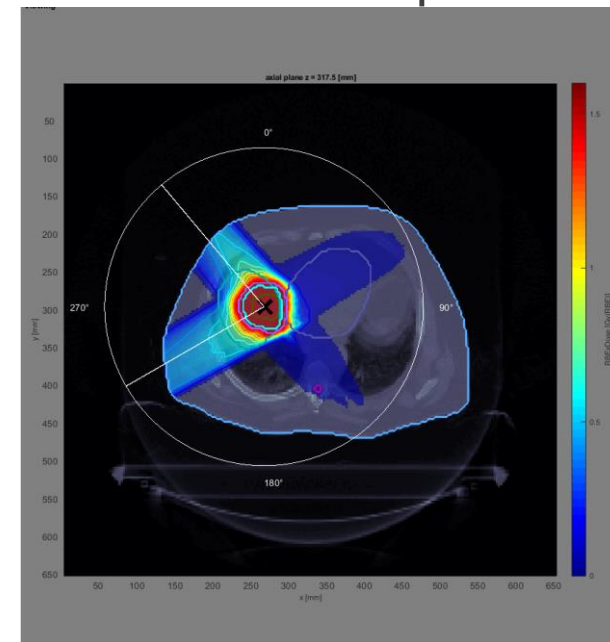
## PROTON THERAPY

2 field geometry



## CARBON ION THERAPY

Same geometry for carbon, fragmentation effect of particles



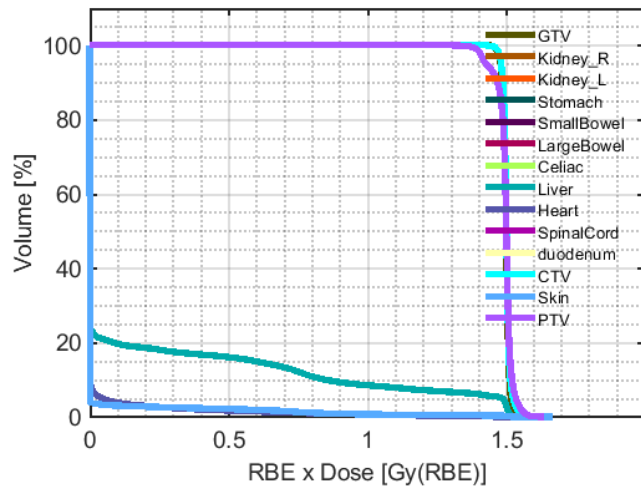
# COMPARISON FOR PROTON AND CARBON ION THERAPY FOR LIVER



## PROTON THERAPY

No dose in myelon

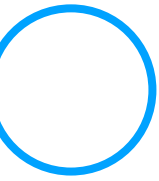
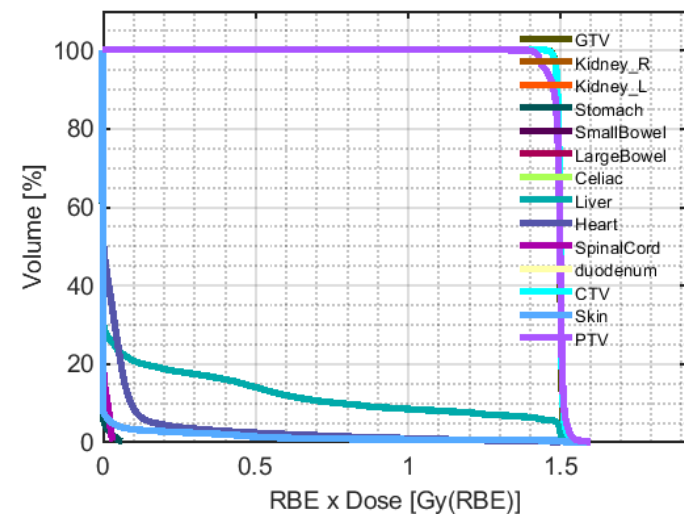
Low dose in small heart volume



## CARBON ION THERAPY

Low dose myelon

Lower entrance dose







# CONCLUSION

Optimized liver treatment for three modalities

Good PTV coverage for all treatments

Lower OAR dose for protons

Lower entrance dose for carbon ions



A decorative graphic featuring a thick pink arc that curves across the top and sides of the page. In the top-left corner, there is a dashed orange circle. In the top-right corner, there is a dashed green circle. A small yellow dot is located on the left side of the pink arc. A small cyan dot is located on the right side of the pink arc. In the bottom-right corner, there is a solid blue circle. The text "Thank you for your attention" is centered in a large, black, sans-serif font.

Thank you  
for your  
attention