

### Particle Therapy MasterClass

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arba shala	Adisa Kastrati	Galaxy A11	Ajet Murati	Artan

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Rinora Jusufi	Merjeme Sulejmani	Arita's iPhone	atopi	Isak Allu
Berina Idrizi	Nadir Ymeri	Shekull Llapashtica	Naser Mustafa	Afrora Krasniqi
Aurora Xhara	Alejna Ameti	Diellza Behadini	Fjolla Gashi	Blerton Ajvazi
iPhone (2)	Gylten	Selda	Azra Sherifi	Berna Krosi
Zoom user	Anila Marke	sanije bajrami	iPhone	Sara Sinani
Sumeja Murati	Dea Lleshi	Fatime Sulejmani	Fjolla Trepça	Gizele's iPhone
Alisa Kerkuti	Endrit Nezir	anida ameti	jetmir	Rilind Jahiu
Rilind Jahiu	Lirije Verzivolli	Diana Ilijazi	Merisa	Era
Hena	Hafsa A	NURAY DONMEZ	Jusra Xheladini	Enisa Kacallniku
Qendresa Mirzo	Leonna	Besa Sadiku	Bardh Jakupi	Nejla
diellza lleshi	Manushaqe's Gala...	Aleina Arslani	Floriana Lela	sara duka
Laura Doraci	Ardona	Jusra'	Erda Bajrami	Eroll Elezi

# Particle Therapy Masterclass



Initiated by: Yiota Foka (Coordinator - CERN, IPPOG), Niklas Wahl (DKFZ), Hans-Peter Wieser (DKFZ, LMU), Christian Graeff (GSI)

## 1. Kurs i shkurtër i terapisë me grimca

Adaptuar dhe Prezentuar nga: **Bashkim Ziberi (UT)**  
Përkthyer në Shqip nga: **Albana Topi (GSI)**

Slide të krijuara nga:  
Viridiana Badillo (FI-UNAM)  
Enrique Sánchez (FI-UNAM)  
Aris Mamaras (AUTH)  
Martina Palkowitsch (DKFZ)  
Niklas Wahl (DKFZ)  
Yiota Foka (IPPOG, CERN)



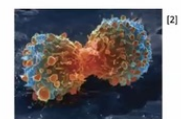
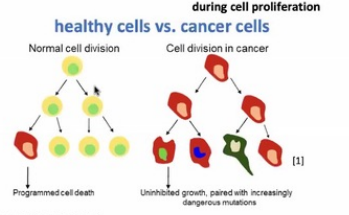
## 2. Kanceri

- Është ndarja dhe rritja e pakontrollueshme e qelizave
- Mund të shpërndahet në pjesë të tjera të trupit
- Mbi 100 tipe të ndryshme, individual

### Teoria e formimit të kancerit:

mutacionet (random) rrisin mundësinë e formimit të kancerit duke shkatërruar ciklin/programin normal të ndarjes së qelizës dhe vdekjes së qelizës.

Në këtë mënyre kemi akumulimin e një mase të qelizave kancerogjene të cilat do të duhet ti rrezatojmë.



Cancer cell of a lung tumor during cell proliferation

[1] Garak76, Suhadi Jorha'Y (https://commons.wikimedia.org/wiki/File:Zellteilung\_normal\_im\_Gegensatz\_zu\_Krebs.svg), 'Zellteilung normal im Gegensatz zu Krebs'

[2] fineartamerica - Lung Cancer Cell Division. Accessed from https://fineartamerica.com/featured/lung-cancer-cell-division-sem-steve-gschmeissner.html?product-metal-print on 12.02.2021. Lettering was adapted.



Sumeja Murati

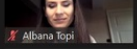
Sumeja Murati



Nermine Muradi



Bashkim Ziberi



Albana Topi

Manushaqe's Ga...

Manushaqe's Galaxy S...

Galaxy A11

Galaxy A11

Sumeja Murati

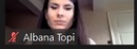
Sumeja Murati



Nermine Muradi



Bashkim Ziberi



Albana Topi

Manushaqe's Ga...

Manushaqe's Galaxy S...

Galaxy A11

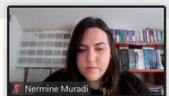
Galaxy A11

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## Radioterapia me grimca

Albana Topi, PhD (a.topi@gsi.de)  
On behalf of IPPOG and IMC



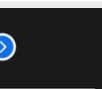
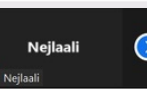
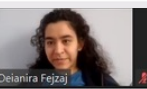
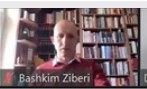
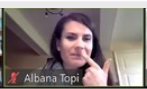
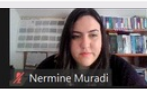
Prof. Mimoza

Prof. Mimoza

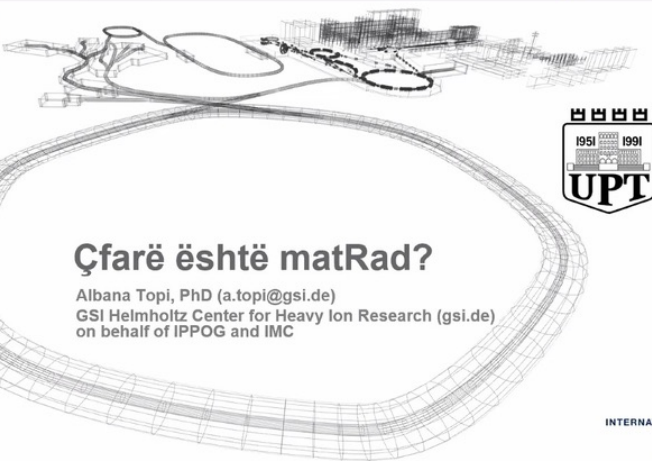
Xhëvdet Podrimaj

Xhëvdet Podrimaj

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## Particle Therapy MasterClass



## Çfarë është matRad?

Albana Topi, PhD (a.topi@gsi.de)  
GSI Helmholtz Center for Heavy Ion Research (gsi.de)  
on behalf of IPPOG and IMC



Slides by:  
Aris Mamaras  
Viridiana Badillo  
Enrique Sánchez  
Yiota Foka







## Metodat e diagnostikimit



Dhurata KUQI  
Universiteti Politeknik i Tiranës  
Tiranë 2022

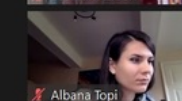
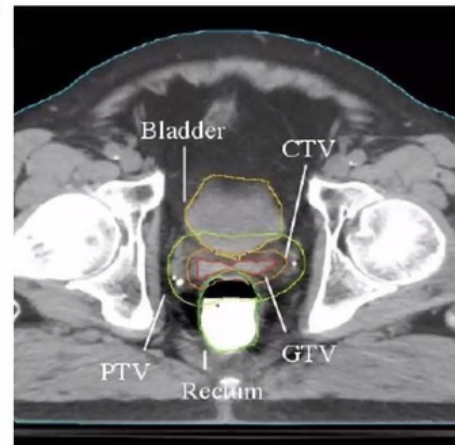
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### 5. Koncepte të rëndësishme

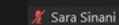
Për shkak të ndryshimeve në përqendrimin e qelizave malinje dhe lëvizjeve të pacientit dhe pasaktësive tjera në procesin e pozicionimit dhe trajtimit të pacientit, nevojitet të përcaktohen disa vëllime shenjz

GTV (**Gross Tumor Volume**) - Tumori i dukshëm që shihet përmes imazherisë – pjesa qendrore e tumorit - vëllimi i plotë i tumorit (GTV).

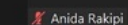
GTV bazohet në informatat e fituara nga kombinimi i metodave imazherike (CT, MRI, ultrasound, etc.), **metodat diagnostike** (raportet patologjike dhe histologjike, etc.) dhe **ekzaminimet klinike**.



Sara Sinani



Anida Rakipi



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matRadGUI

matRad dkfz GERMAN CANCER RESEARCH CENTER IN THE HELMHOLTZ ASSOCIATION

min value: -1074 max value: 1666.4

Status: ready for dose calculation

Workflow: Refresh Load \*.mat data Calc Influence Matrix Optimize Save to DDP

Plan: beam width in [mm]: 5; Gantry Angle in °: 300; Couch Angle in °: 0; Radiation Mode: photons; Machine: Varian; IsoCenter in [mm]: 265.23672164; # Fractions: 30; Type of optimization: normal

VOI name	VOI type	OP	Function	p	Parameters
Skin	OAR	2	Squared Overdosing	300	25
PTV	TARG...	1	Squared Deviation	1000	45
GTV					

Visualization: Slice Selection: anteriorly; Type of plot: intensity; Beam Selection: axial; Display options: show CT, pbr contour, pbr isochines, pbr dose, pbr isochines labels, pbr iso center, visualize plan / beams

Evza Ali

Evza Ali

Albana Topi

Bashkim Ziberi

Nermine Muradi

Artin Dauti

Artin Dauti

Nadir Ymeri

Nadir Ymeri

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Sara Sinani

Dhurrata

Stop Video (Alt+V)

Stop Video

Participants 107

Chat

Share Screen

Record

Live Transcript

Reactions

Apps

axial plane z = 165 [mm]

protone-1kend-Tg119.png

axial plane z = 165 [mm]

protone-1kend-Tg119.png

Stop Video

Participants 107

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Apps

Anida Rakipi

Anida Rakipi

Nermine Muradi

Nermine Muradi

Albana Topi

Albana Topi

Bashkim Ziberi

Bashkim Ziberi

Vesa Murati

Vesa Murati

Sara Latifi

Sara Latifi

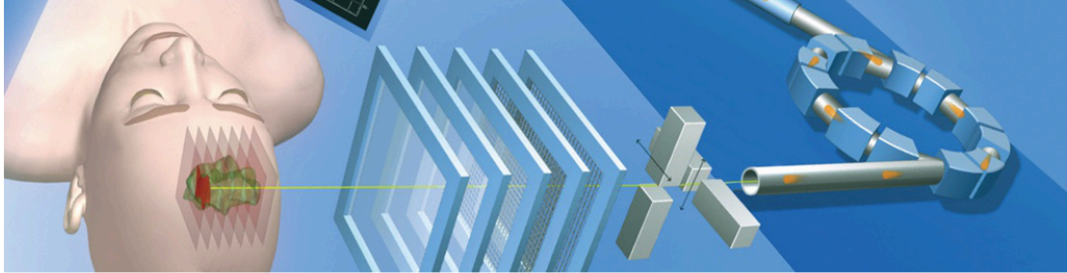
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Anida Rakipi

Sara Sinani

Dhurrata





# Particle Therapy MasterClass

# Common Video Call

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- COMPARISON FOR PHOTON THERAPY FOR DIFFERENT ANGLES
- COMPARISON FOR PROTON AND CARBON ION THERAPY FOR TG-119
- CONCLUSION

## LIVER CASE - CARBON ION BEAM

Carbon one angle beam

OAR	mean	std	min	max	D2
GVV	1.0016	0.0044	1.782	1.971	1.0
Kidney_R	0	0	0	0	0
Kidney_L	0	0	0	0	0
Stomach	2.999604	0.0008	0.0005	0.0005	0.6271
Liver	0.1112	0.4280	1.7804	0	1.5
Heart	0.0425	0.1000	1.0462	0	0.6
SpinalCord	0	0	0	0	0
Bladder	0	0	0	0	0
CTV	1.0040	0.0407	1.782	1.981	1.0
Skin	0.0172	0.1198	1.0428	0	0.1
PTV	1.4943	0.0540	1.782	1.0467	1.0