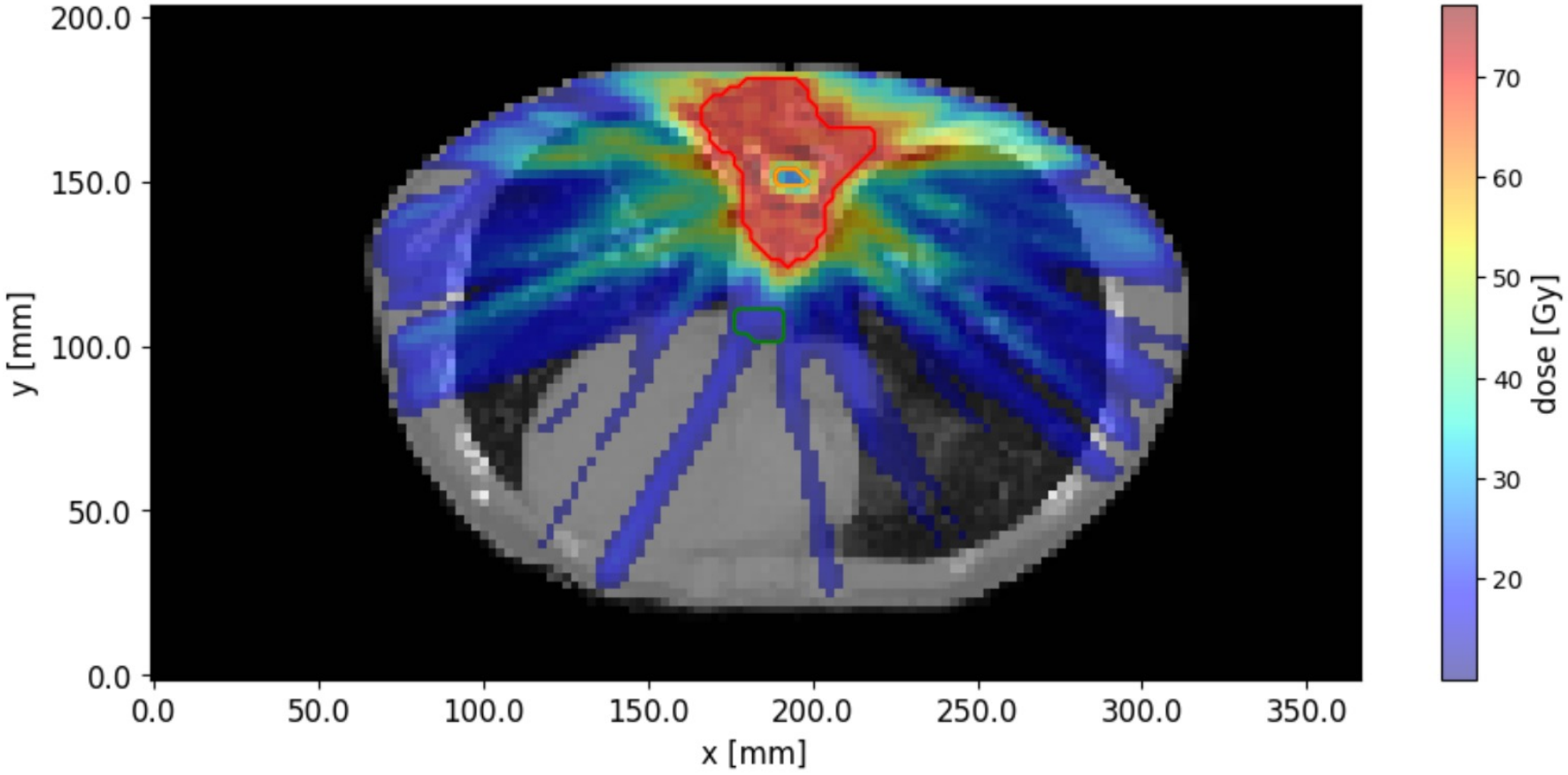
University of Zurich[UZH] | USZ Universitäts Spital Zürich

Exercise class – Ex4

Noemi Bührer, noeminaijia.buehrer@uzh.ch

Exercise 2

Plot CT with VOIs and dose distribution → well solved!



Student solution for ex. 2

Exercise 3

Write a function `calculate_raddepth(angle)` which calculates the radiological depth for each voxel.

Input

– angle: incident angle of the beam

Return

– 2D array with the radiological depth for each voxel

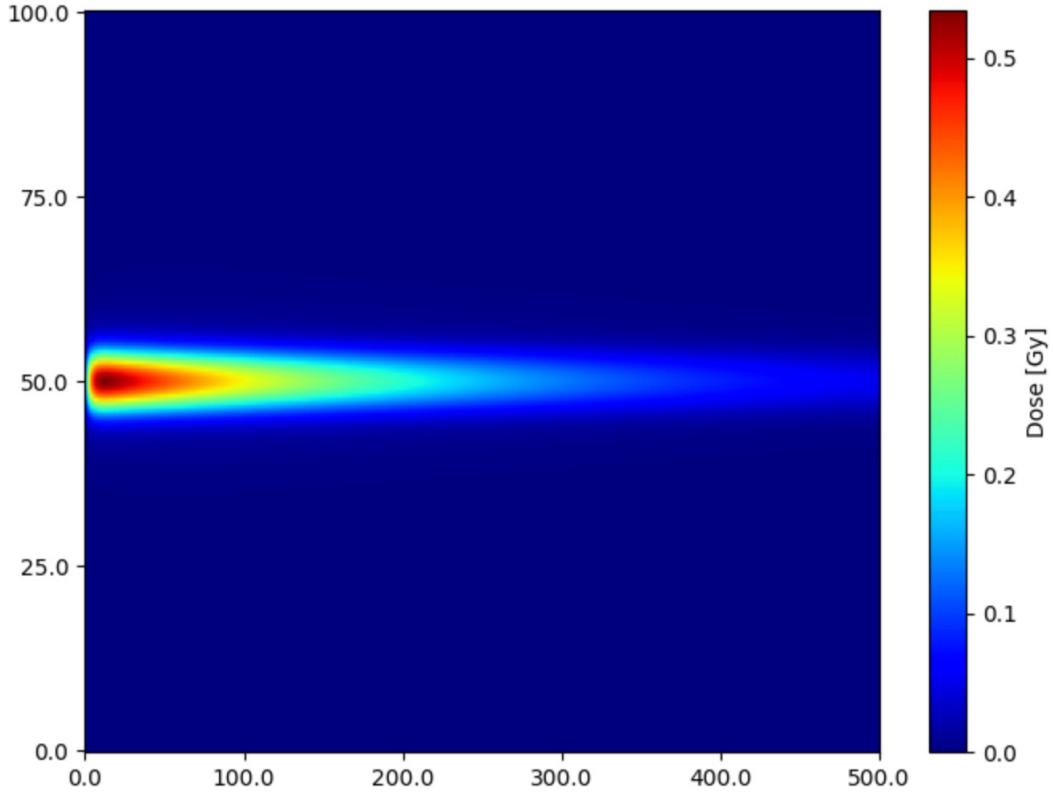
Any questions regarding ex.3?

Exercise 4

Transfer the dose distribution of a photon beam in water to a dose distribution in the patient using radiological depth scaling!

Dose distribution in water
5 mm wide photon beam,
characterised in `beamletdose.mat`

Radiological depth matrix
Calculated in last week's exercise



Exercise 4

Write a function

`calculate_pencil_beam_dose(angle, latpos, raddepth)`

which calculates the dose distribution of the beam in the patient!

Input

- angle: incident beam angle
- latpos: lateral position of the beam's central axis relative to the isocenter (192 cm, 152 cm)
- raddepth: radiological depth matrix

Return

- dose distribution of the beam in the patient as a 2D array of the same size as the CT

What we expect!