

## Hands-On Treatment Planning with matRad

1. Load a head patient case (**HEAD\_AND\_NECK** or **ALDERSON.mat**).
2. Set radiation modality to **Photons** and define one beam angle (**gantry angle**).
3. Trigger dose calculation via button („**Calc. Influence Mx**“).
4. Start inverse optimization by clicking on („**Optimize**“) and analyze the resulting dose distribution.
5. Save the optimization result via („**Save to GUI**“). Next, show the DVH by („**Show DVH/QI**“).
6. Try to define a *better* photon treatment plan by defining more beam angles (e.g. equidistant beam angle spacing [0, 72, 144, 216, 288]).
7. Repeat steps 3-5 and compare results.
8. Change the radiation modality to **Protons** and use one gantry angle, same as used for photons in step 2.
9. Repeat steps 3-5 and compare the dose distributions on the basis of photons and protons.
10. Create a carbon ion treatment with the exact same settings as used for the proton treatment plan and repeat steps 3-5. – What difference can now be observed?
11. Compare and analyze all four obtained **DVH/QI**.