Hands-On Treatment Planning with matRad

Exercise – use sample (TG119) phantom and follow the steps for radiation type photons vs. protons vs. carbon ions;

1. Load the TG119 phantom via the Load *.mat button (**TG119.mat**) from Application folder
2. Set Radiation Mode 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 analyse the resulting dose distribution.
5. Save the optimization result via ('**Save to GUI'**). Next, show the DVH by ('**Show DVH/QI'**).
6. Change the Radiation Mode to: **Protons** and leave the beam angles unchanged
7. Repeat steps 3-5 and compare the dose distributions on the basis of photons and protons.
8. Try to define a *better* photon treatment plan by defining more beam angles (e.g. Equidistant beam angle spacing [0, 72, 144, 216, 288]).
9. Repeat steps 3-5 until the dose distribution is deemed satisfying and compare results. Repeat all the steps so far by changing the Phantom type to liver, head and neck etc.

10. Save graphs and conclude.