



ERLANGEN CENTRE
FOR ASTROPARTICLE
PHYSICS

Simulations of a medical linac with evaluation of dose profiles behind an electron applicator

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How do we do it?

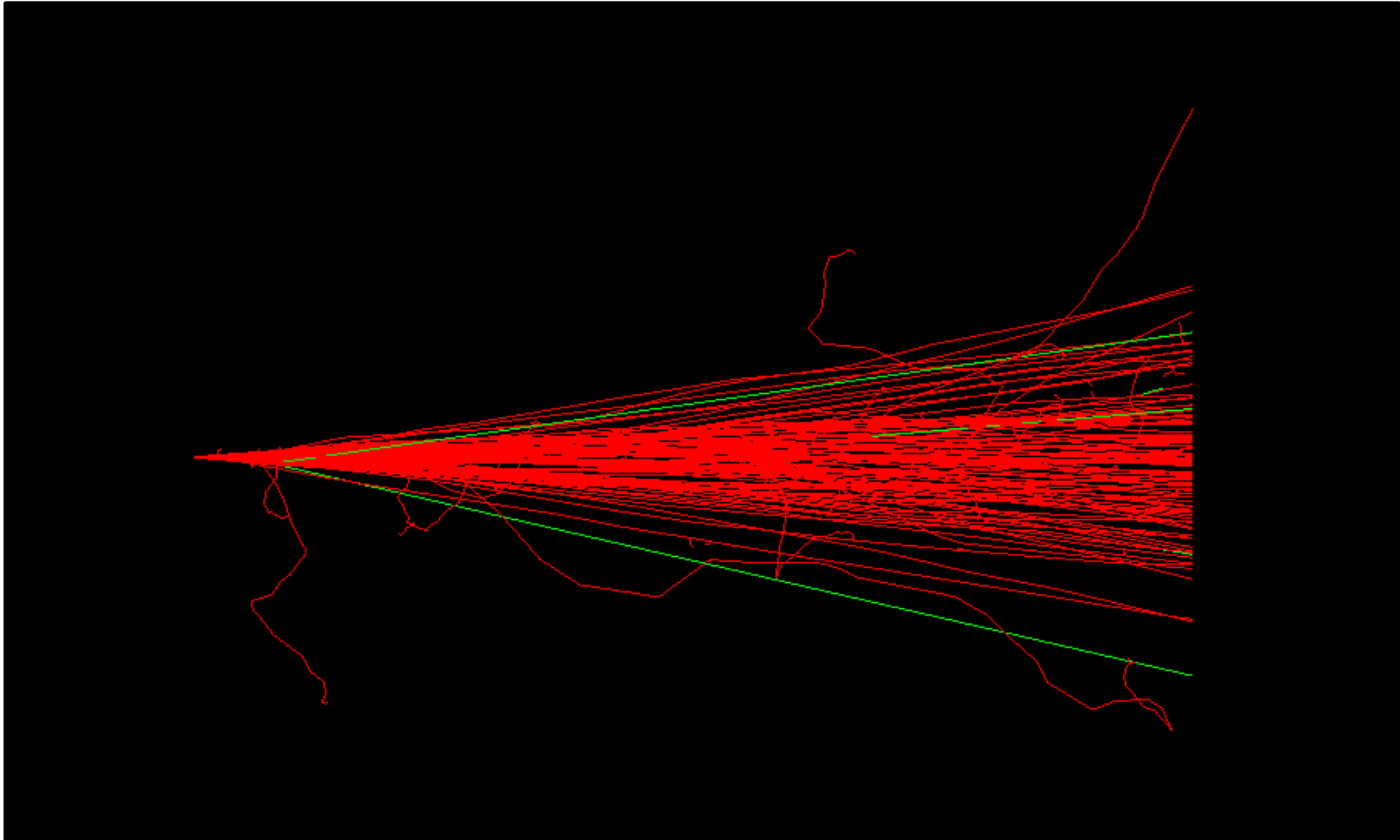
- Monte-Carlo-Simulation
- Geant4: Low Energy Electromagnetic package
- Detailed setup of a medical linac
- In cooperation with Siemens
- Computer cluster with 250 cores

- First step: electron application

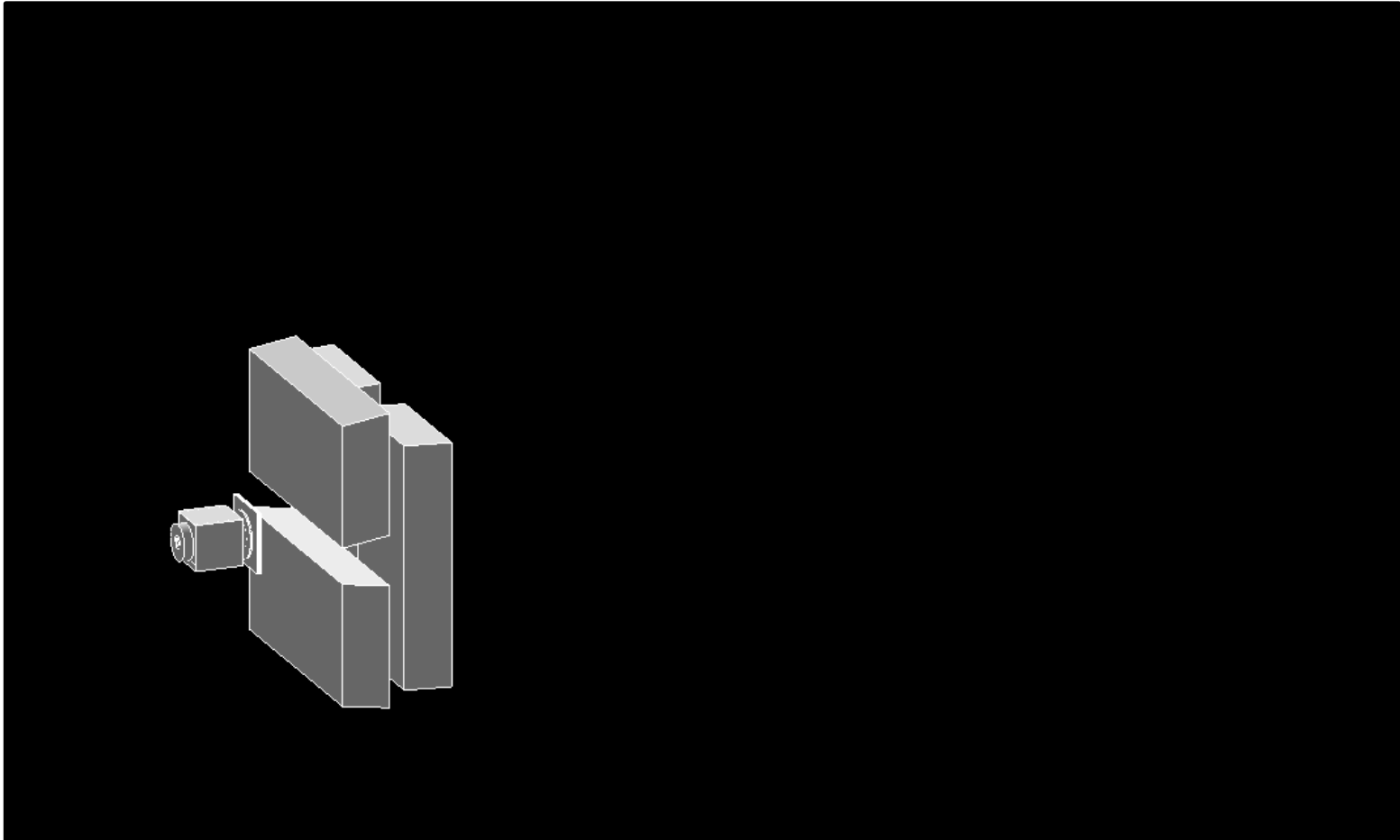
Overview of the linac



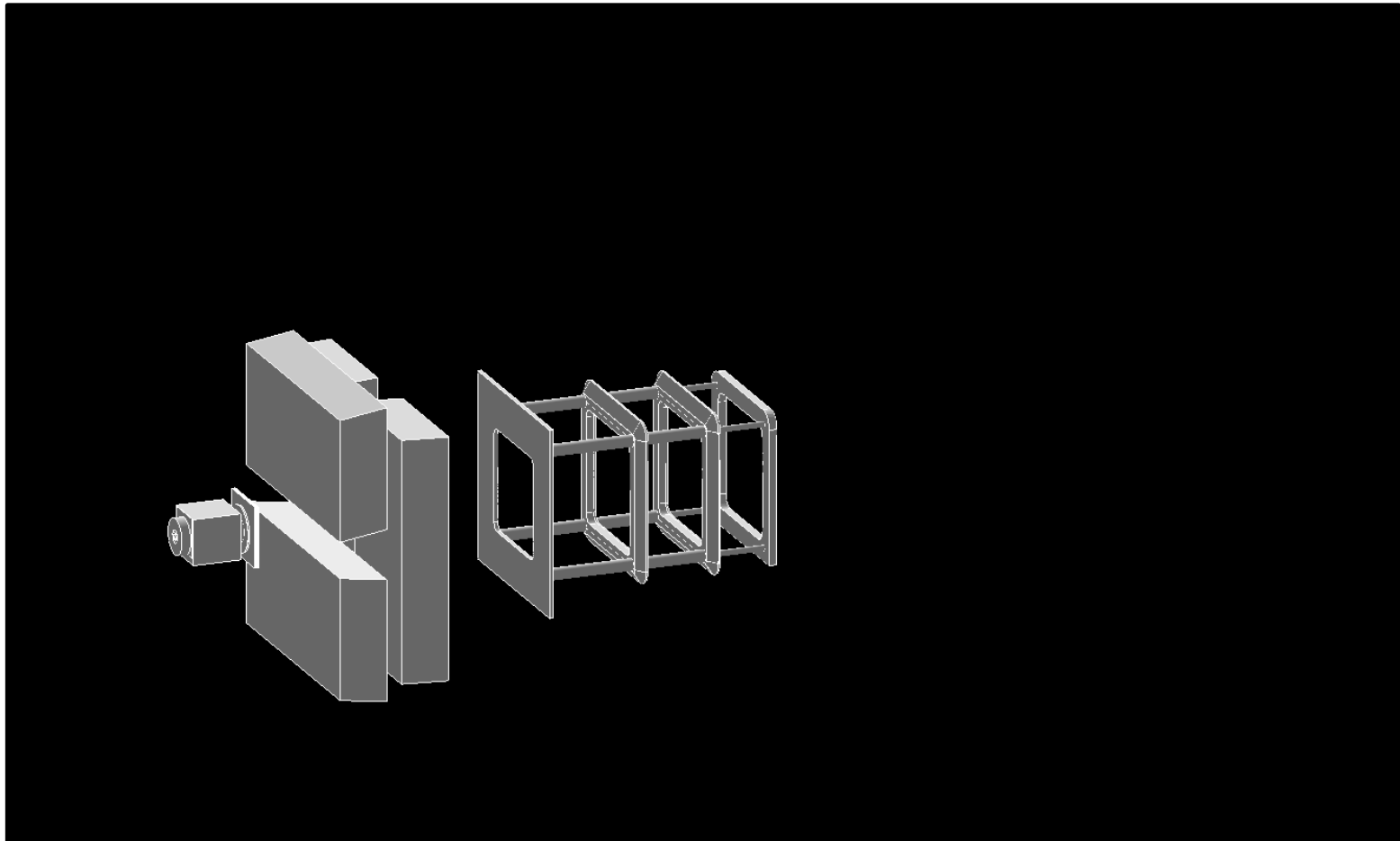
Setup of a medical linac: source



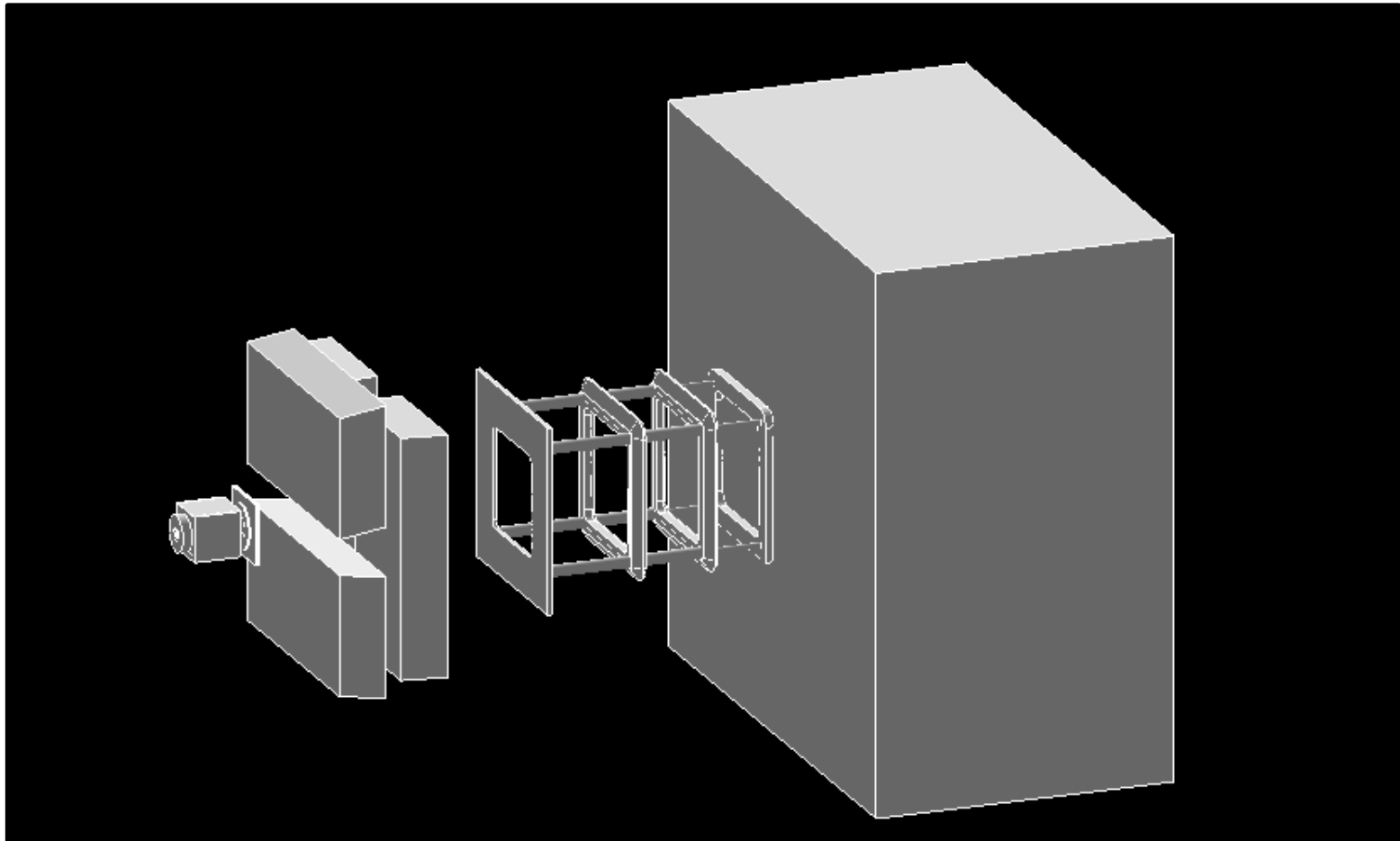
Setup of a medical linac: foils and collimators



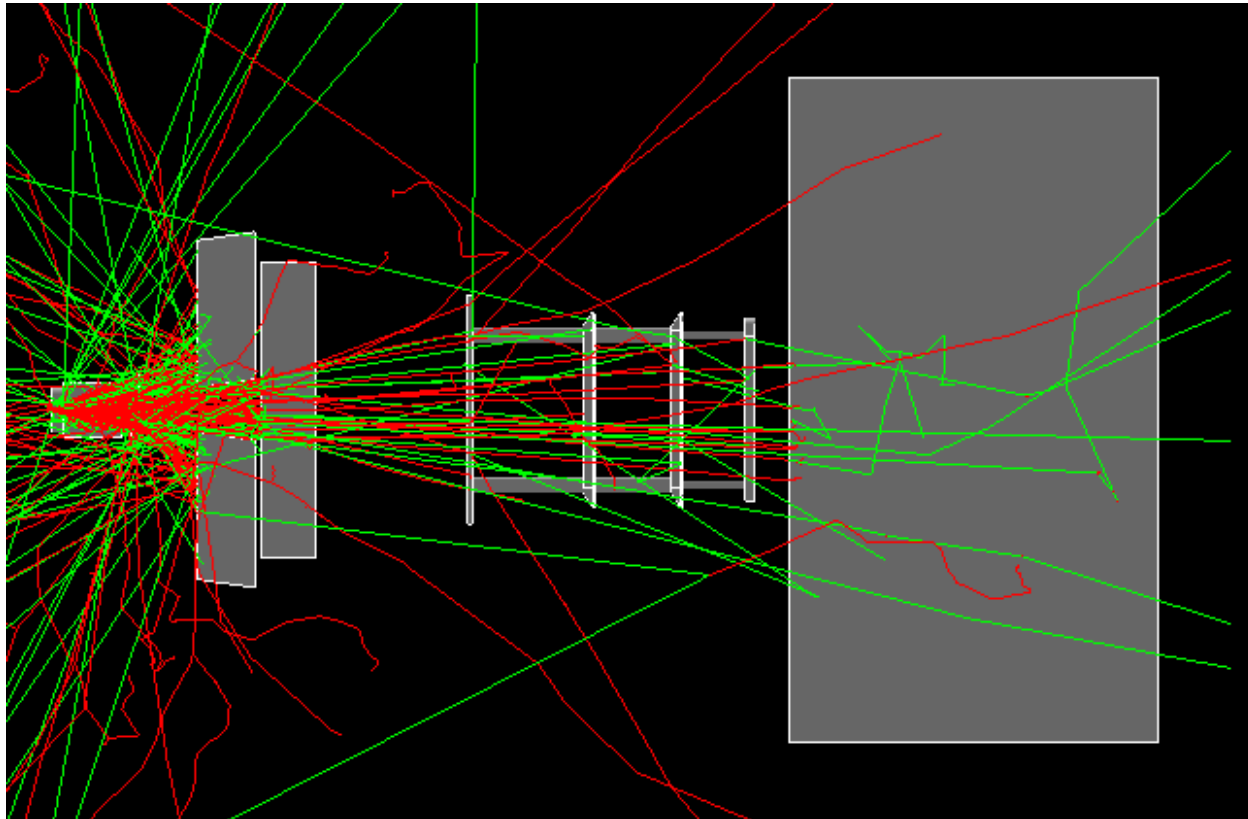
Setup of a medical linac: applicator



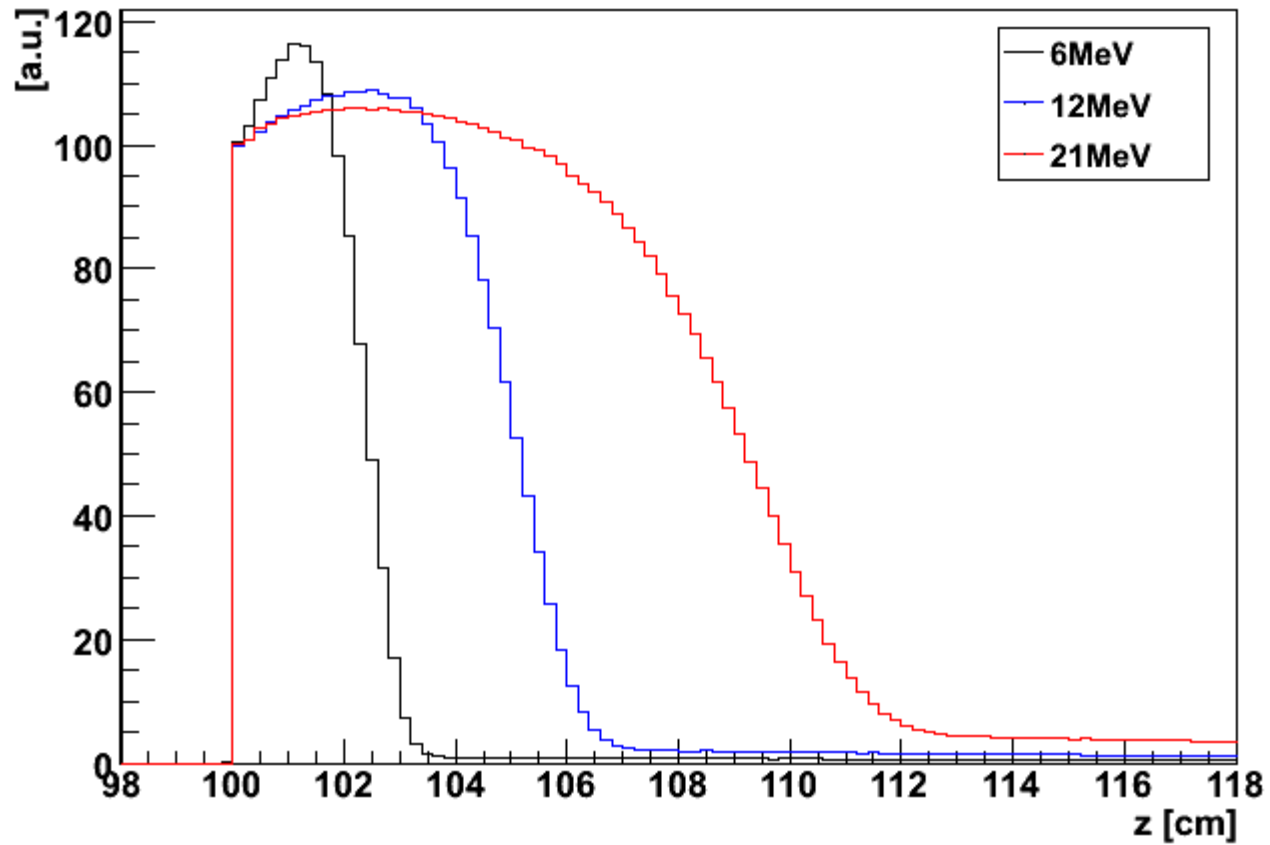
Setup of a medical linac: water phantom



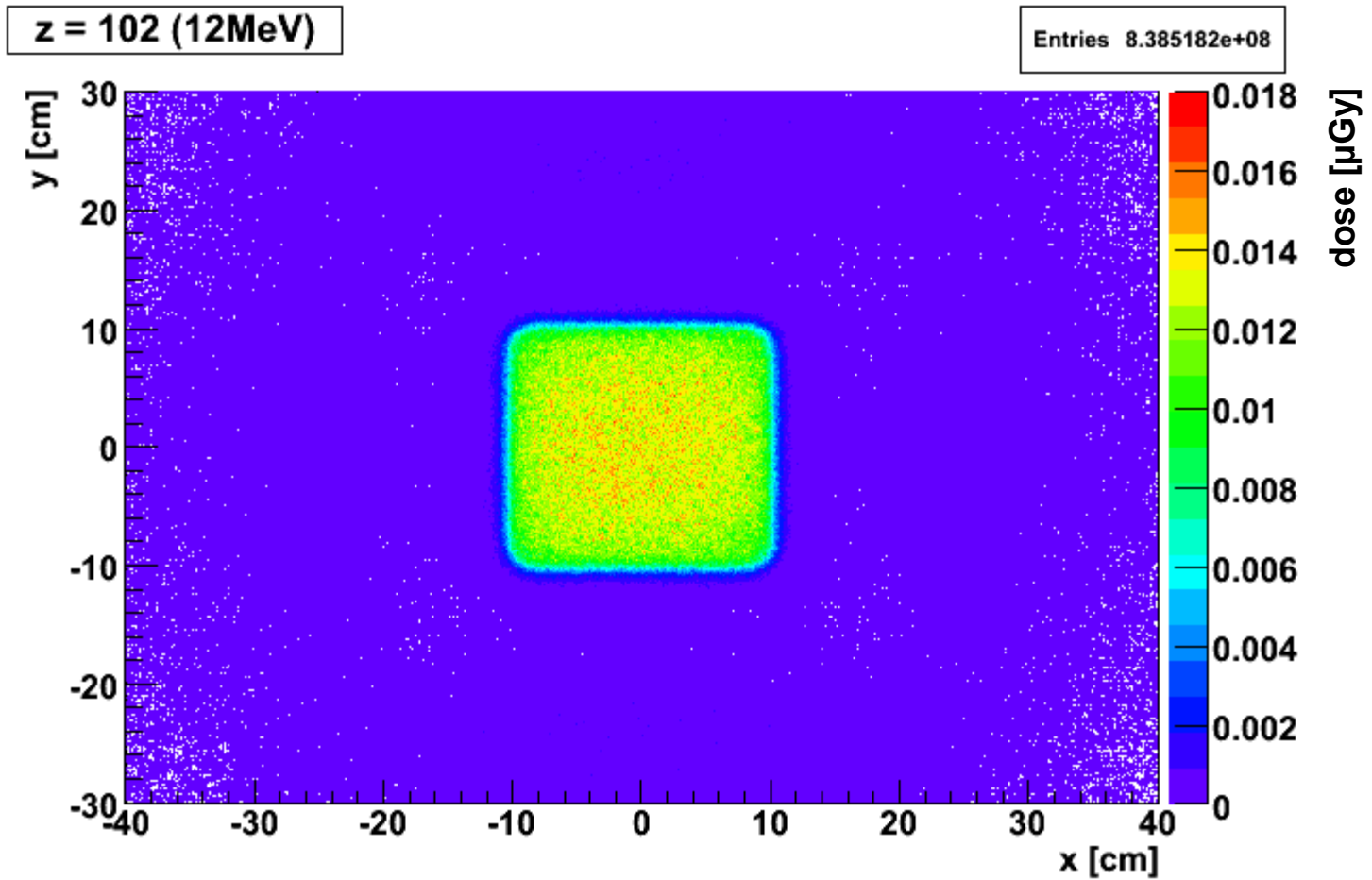
Setup of a medical linac



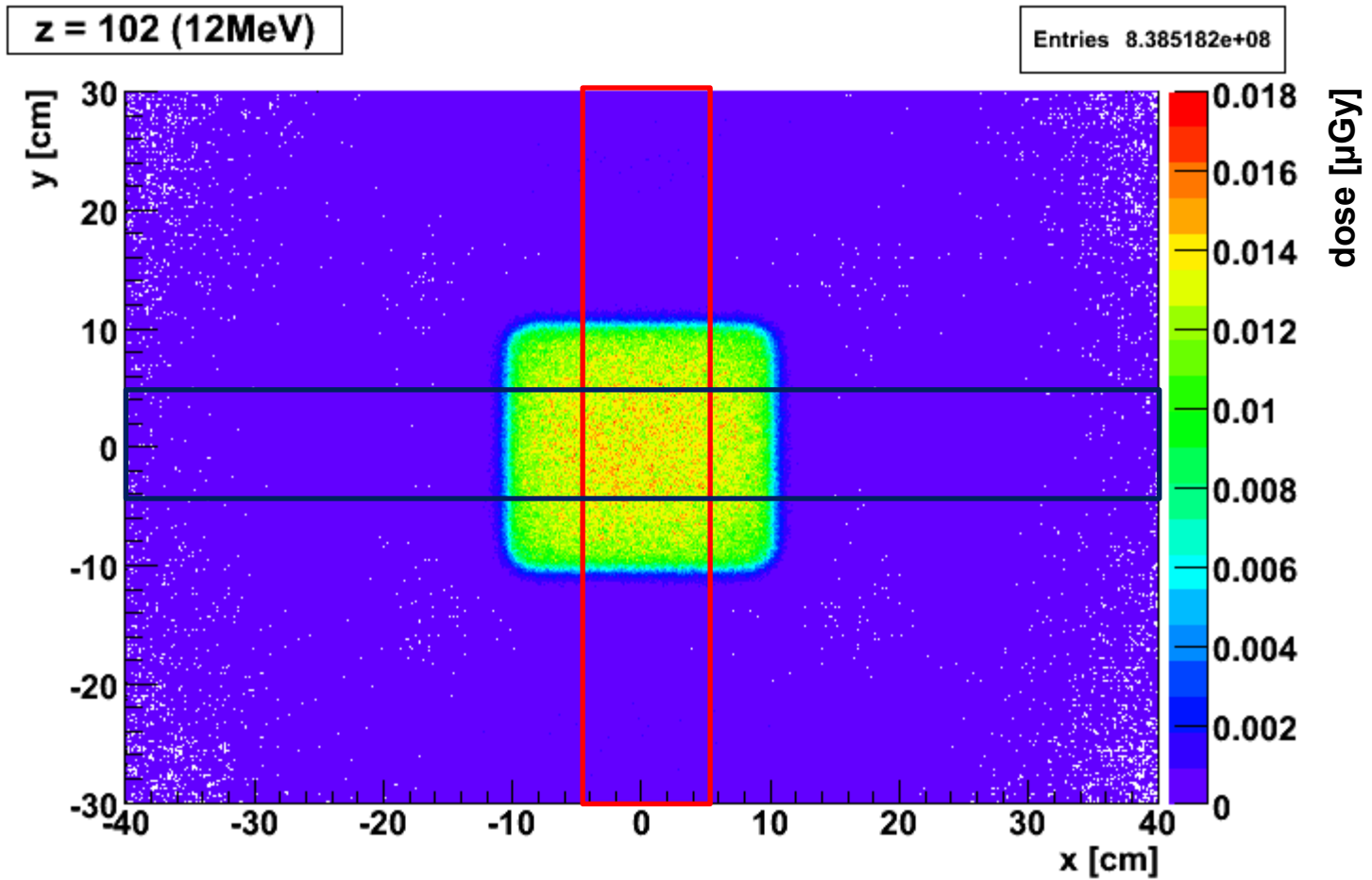
Depth dose profiles



Dose profile in xy-plane

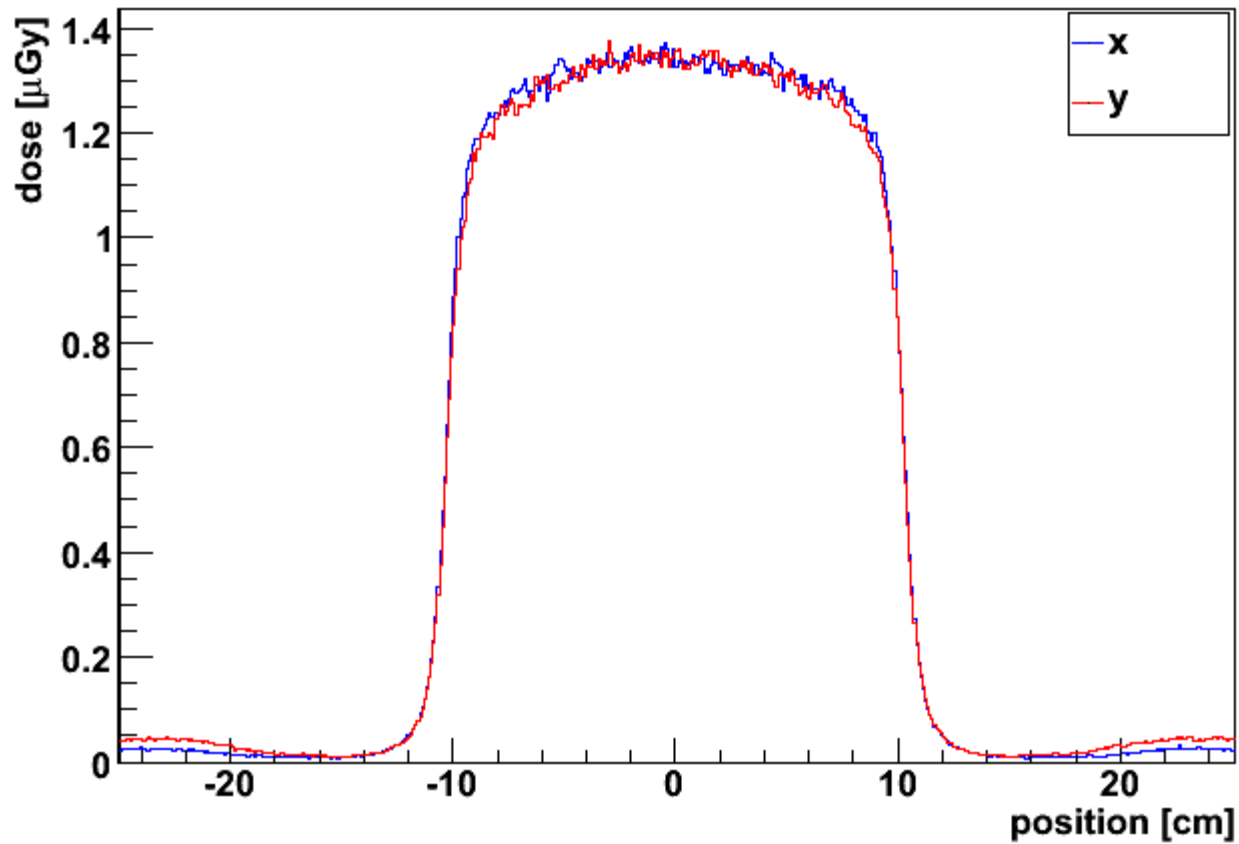


Dose profile in xy-plane



Dose profiles

z = 102 (12MeV)



Conclusions

- Realistic simulation
- Evaluation of dose profiles
- Easy change of setup and parameters
- Less prototyping
- Approach to a better understanding of the physical properties

Thank you for your attention