DEFT Rfgun work package

Scope: - 3D design and specifications for the RF-Gun, RF and water including solenoid
- Vacuum specifications
- 3D layout and specification for first meter of beam line, including diagnostics and laser coupling
- Cathode and cathode loading system specification
- consulting during production phase

To do:

- Check aperture and laser coupling, discuss with Edu
- Drawings to Alexej and Ping
- Vacuum calculation, Sergio
- Input distributions realistic ?
- Cathode consideration, ablation threshold
- Laser coupling
- Beam diagnostics
- Choice of rfgun design

RF-Gun vacuum a few numbers

Charge in DEFT: 945x20x0.3 = 5.67 uC per treatment in 100 ms

PHIN tests: In the past 5.5uC/s continuously → dynamic vacuum of the order of 1-2x 10^{-9} mbar needed to preserve Qe of the cathode
Static vacuum was 1-2x 10^{-10} mbar, after activation of NEG

Question: How does the different timescale effects the Qe.

To be save one should aim for a dynamic vacuum of 1-2x 10^{-9} mbar