Discussion questions

- Selection of working gas
  - Baseline the Ne 585 line?
- Experimental programme priorities
- Simulations priorities

Serban – photon acquisition times

Projectile	Emitter	λ [nm]	σ [cm²]	I [A]	η_{pc}	N_γ [s^{-1}]	$1/N_\gamma$ [s]
electron	N_2	337.1	$1.5 \cdot 10^{-23}$	5	0.2	1.2	0.8
electron	N_2^+	391.4	$9.1 \cdot 10^{-19}$	5	0.2	$7.5 \cdot 10^{4}$	$1.3 \cdot 10^{-5}$
proton	N_2^+	391.4	$3.7 \cdot 10^{-20}$	1	0.2	$6.1 \cdot 10^{2}$	$1.6 \cdot 10^{-3}$
electron	Ne	585.4	$1.4 \cdot 10^{-20}$	5	0.05	$2.9 \cdot 10^{2}$	$3.5 \cdot 10^{-3}$
proton	Ne	585.4	$4.7 \cdot 10^{-22}$	1	0.05	1.9	0.5
electron	Ar	750.4	$2.8 \cdot 10^{-19}$	5	0.01	$1.2 \cdot 10^{3}$	$8.4 \cdot 10^{-4}$
electron	Ar^+	476.5	$1.2 \cdot 10^{-20}$	5	0.2	$9.9 \cdot 10^{2}$	$1.0 \cdot 10^{-3}$

Remark: The Ar^+ cross section can be significantly increased by integrating over $400 < \lambda < 500$ nm

Plans for 2018

- Install new gun in the old setup to further decrease the integration time (in seconds or less)
- Scanning gauge working in continuous jet mode
- Finish commissioning of the second gas jet setup
  - Nozzle and skimmers alignment
  - Chamber blackening
  - Pumping test
  - Bake-out
- Experiment tasks for the second gas jet
  - Jet image of e-beam, integration time and resolution
  - Different gas species, Nitrogen, Neon, Argon
  - Nozzle sizes (20um, 30um, 50um) and shape (regular or naval nozzle)
  - Jet density measurement

Experiments

- Cockcroft
  - Check the extrapolations of the cross-sections with the new electron gun.
  - Hao - Peter suggests adding-up a number of pixels to produce an image that should significantly smooth the image.
  - Hao - which nozzle, how to align based on available equipment
  - Hao - remake the tests that allow us to calibrate the jet vs residual gas pressure
  - Hao - we agree that we make a fixed FC as a dump for the e-gun on the 2nd set-up?
  - Can we add a 4^{th} 'exhaust skimmer' on the set-up
  - Serban - make a detailed comparison between Ne, N2 and Ar, with measurement of e-gun with a Faraday Cup to verify intensity
- Gerhard - come back to test different blackening coatings.
- Marton - look at then moving away the exhaust pump - could we do this experimentally on the v2 setup as well??
- Serban - we want to measure reflectivity of surface coatings that are UHV compatible.

Simulations

- Hao - should we consider gas jet clusters?
- Przemek - Carsten will find their publications on the their analysis of the gas nozzle
- Przemek - understand the difference between a perfect gas model with no interaction between molecules and a viscous model from a FE
- Marton - look at 4th skimmer on exhaust line.
- Marton - look at tilting the exhaust pump
- Marton – look at a gas mirror

Design

- Serban - can we find a more suitable intensifier/camera with ~20%+ efficiency for Neon
- Gerhard - Decide what details really need to be taken in October 2018. Timeline for decisions.

Interfaces

- Adriana - Find information on magnetic fields from the SC magnet at the level of the camera
- Adriana - 200 mm length between cryostats is just for the instrument -we should optimise this with Anttii, including bellows and fixed points.
- Gerhard - We need to write down the operational scenarios so that we can feed back into the vacuum design
- General - what are the parameters of the e-lens test stand that we need to test the BGC
- Serban - Adriana can send the radiation map for the region of the e-lens.

General

- Publications - how do we organise this? Prepare for peer-review journals