Experimental programme 2019

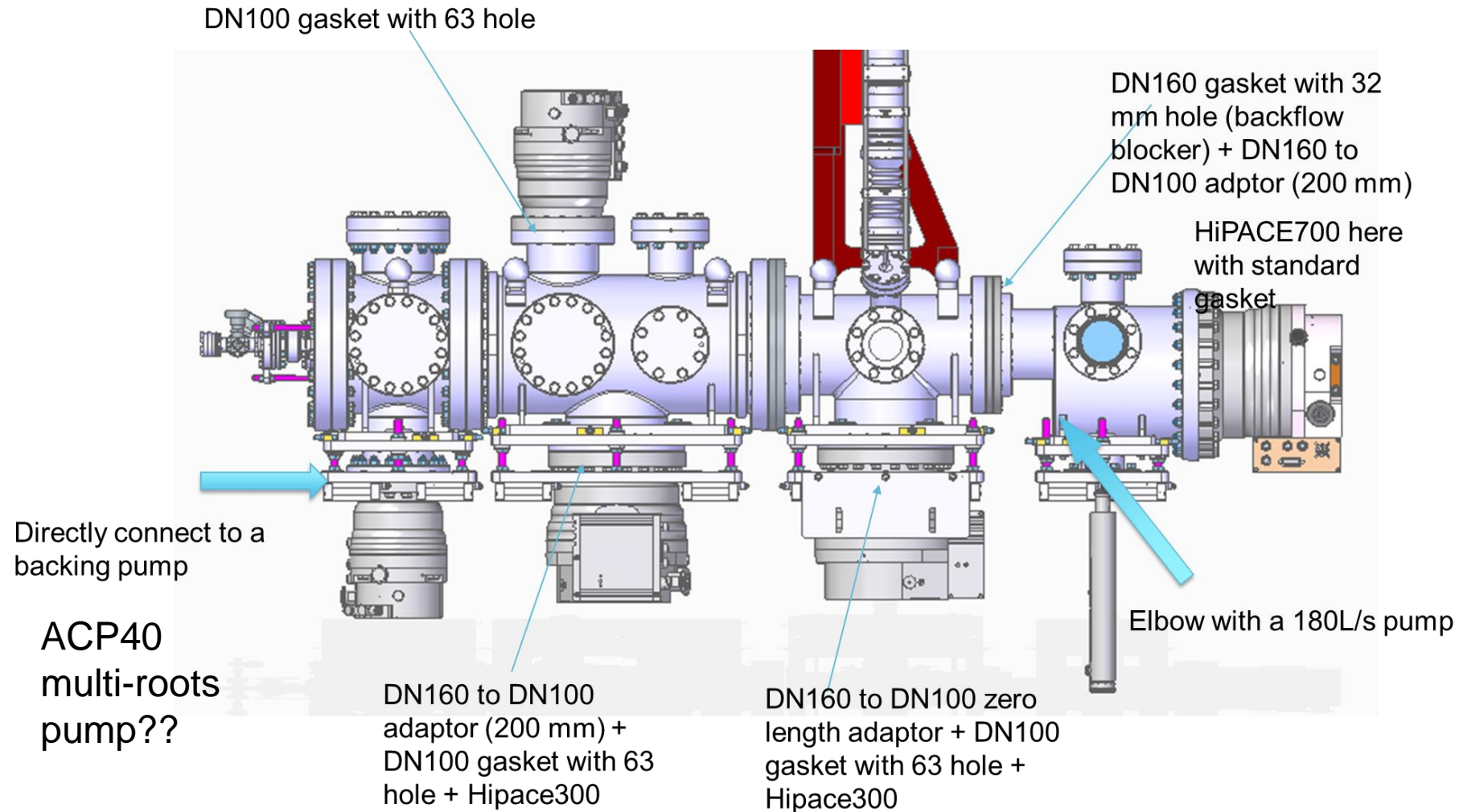H. Zhang, A. Salehilashkajani, C. Welsch

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
  - Nozzle, skimmer distance
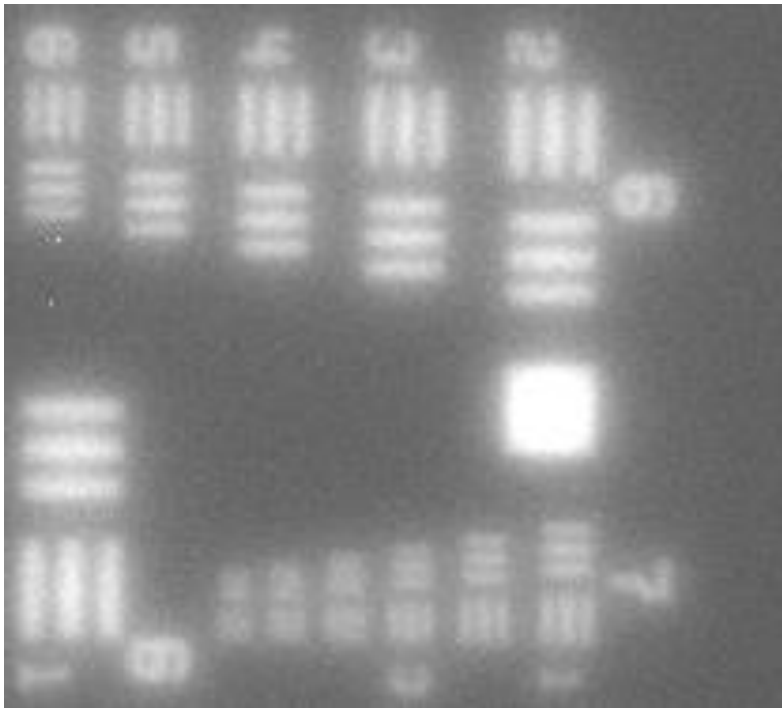
Future work

- Continue to optimize the design and geometry
  - Check again the alignment
  - E.g. new De Laval nozzle
  - Change geometry of skimmers.
- Characterize Neon gas jet
- Argon used as a working gas
- Design and building of v3 gas jet system (LHC compatible)
  - Final deliverable for the HL-LHC-UK

Further vacuum test

DN100 gasket with 63 hole

DN160 gasket with 32 mm hole (backflow blocker) + DN160 to DN100 adptor (200 mm)

HiPACE700 here with standard gasket

Directly connect to a backing pump

ACP40 multi-roots pump??

DN160 to DN100 adaptor (200 mm) + DN100 gasket with 63 hole + Hipace300

DN160 to DN100 zero length adaptor + DN100 gasket with 63 hole + Hipace300

Elbow with a 180L/s pump

Alignment

- Make the alignment system ready
- Check again the alignment

1951 USAF resolution target:

Calibration: 1.35 um/ pixel
Magnification: = 4.34
Resolution: Group 7 set3: 161.3 lines pair/mm

Different geometry

- Different nozzle test (50um nozzle, De Laval nozzle)
- Distance of nozzle to skimmer1 and skimmer1 to skimmer2 (different spacer)
- Simplified 3rd skimmer
  - Laser machined in a 100um thick stainless steel (30um accuracy)

Neon gas jet characterization

- Using moveable gauge
  - Current slit opening
  - Could be a pin hole opening
    - Test with Nitrogen first

- Photon gauge

Argon test

- Gas jet image
- Characterization

Thank you