

Experimental programme 2019-2020

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Previously Plan

- Continue to optimize the design and geometry
 - Check again the alignment ✓
 - E.g. new De Laval nozzle ↻
 - Change geometry of nozzle 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

Plan for 2019-2020

- Increase gas jet density.
 - Nozzle chamber pressure study
 - Nozzle study
 - Reduce distance between skimmer to interaction.
- Maintain or lower background pressure.
 - Calculate gas mass flow
 - Measure the gas mass flow
 - Measure the pressure with any changes.
- Resume the experimental program for ion collection (Narender)
- Manufacturing and building version 3 system.

Study of bg pressure in the nozzle chamber

- Lower pressure by reduce the skimmer size
- Or install more turbo pump
- Increase the pressure by leaking valve.

Test of a flow meter

- 5bar maximum
- 0-0.5L/min flow range. (0-3 is also available)
- Use for gas load study in the nozzle chamber



CI nozzle test

- Comparison of different nozzle size
 - 20, 30, 50 μm
 - Gas load
 - Pressure in the nozzle chamber
 - Jet density
 - De Laval nozzle
 - Gas load
 - Pressure in the nozzle chamber
 - Jet density



New intensifier or camera to test

- Stefano's intensifiers
 - Quantum efficiency VS dark counts
- EMCCD
 - Benefit

Other to do list

- Laser interferometry
 - Density measurement in the nozzle chamber.
- Test a reduced-length skimmer chamber in current setup.
 - Gas jet density increase?
 - Background pressure increase?
- Gas dynamics simulation?
 - Fluent + molflow

3rd version gas jet

- Final design fix date?
 - Chamber lead time 3 month.
- Procurement
 - Parts could be reused from version 2.
 - Pumps, skimmers, gauges, test frames...

Thank you



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