











BGC Collaboration Meeting Wrap-up

Ray VENESS



Liverpool 2-3 December 2024

09:00 → 09:10	Welcome to Liverpool (Please note times are given as UK times, add 1h for GVA/GSI)	🕒 10m 📍 Saint George's Suite 📄
Speaker: Carsten Peter Welsch (Cockcroft Institute / University of Liverpool)		
 BGC Welcome 2024...  BGC Welcome 2024...		
09:10 → 09:30	Summary and actions from last meeting and objectives of the workshop	🕒 20m 📍 Saint George's Suite 📄
a) Review actions from CERN collaboration meeting December 2023 b) Milestones for the project at CERN c) Summary of future goals for the collaboration		
Speaker: Raymond Veness (CERN)		
 BGC-2024-kickoff-fi...  BGC-2024-kickoff-fi...		
09:30 → 09:50	Cockcroft collaboration	🕒 20m 📍 Saint George's Suite 📄
a) Status of the collaboration b) LivUni/CI Manpower situation and plans, financial situation, STFC main milestones c) Foreseen scientific publications for 2025		
Speaker: Carsten Peter Welsch (Cockcroft Institute / University of Liverpool)		
 Gas Jet 2024_12.pdf  Gas Jet 2024_12.pp...		
09:50 → 10:50	Summary of know-how gained in 2024 at Cockcroft CERN	🕒 1h 📍 Saint George's Suite 📄
Speaker: Daniele Butti		
Summary of CI simulations		🕒 20m 📄
Speaker: Hao Zhang (University of Liverpool (GB))		
Summary of 2024 Experimental Results with LHC Proton and Ion Run		🕒 20m 📄
Speakers: Daniele Butti, Stefano Mazzoni (CERN)		
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Summary of the 2024 Experimental Results at Cockcroft Institute		🕒 20m 📄
Speakers: Hao Zhang (University of Liverpool (GB)), Shakti Prasad Sethi (University of Liverpool (GB))		

10:50 → 11:10

Coffee Break

🕒 20m 📍 Saint George's Suite

11:10 → 12:00

Version 4 instruments

🕒 50m 📍 Saint George's Suite

Delivery of BGC v4.1 for EBTS (10+5)

🕒 15m

Speaker: Hao Zhang (University of Liverpool (GB))

v4.1 Installation on the EBTS tbc (10+5)

🕒 15m

Design Criteria, Status and Strategy for BGC v4.2 for LHC Beam 2 in Point 4 right (15+5)

🕒 20m

Speakers: Chiara Pasquino (CERN), Gerhard Schneider (CERN)

Design criteria and ... Design criteria and ...

12:00 → 12:30

Strategy of the Collaboration development

🕒 30m 📍 Saint George's Suite

Status UK2
Information concerning UK3 for gas based instruments

Speakers: Carsten Peter Welsch (Cockcroft Institute / University of Liverpool), Dr Hao Zhang (University of Liverpool/Cockcroft Institute), Oliver Stringer (University of Liverpool (GB)), Raymond Veness (CERN)

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12:30 → 14:00

Lunch

🕒 1h 30m 📍 Saint George's Suite

14:00 → 14:20

Pulsed Gas Jet Experience at GSI (15+5)

🕒 20m 📍 Saint George's Suite

On-line contribution

Speaker: Peter Bernd Gerhard (GSI)

GSI_UNILAC_Gasst... GSI_UNILAC_Gasst...

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GSI_UNILAC_Gasst... GSI_UNILAC_Gasst...

Scientific specification:

- What instrument do we want for the LHC? Precision instrument, on-line monitor, halo monitor or 'all'?
 - 'Accurate' profile instrument for absolute measurements
 - 'Complete' beam size instrument for ions – with on-line capability
 - Halo capability needs some resources and time to demonstrate feasibility with outcome unclear for now. Can we do any more preliminary estimates before the halo review on 18/12. However, will need physics runs in 2025 and perhaps 2026.
 - Engineering for halo is principally resources and time
 - Profile (protons and ions) are mutually compatible. Halo is (probably) a different set-up, but TBC depending on skimmer gas density measurements
- What is the best gas? N₂ or Ne? Does this depend on the above question?
 - There is a scientific interest in using N₂, for comparison with the SPS tests, but this justification should be written down

Technical specification

- What are we able to build for the LHC with the space, time and resources available?
 - Time and resources still need to be confirmed, but going in right direction with strong support within CERN and STFC
 - I think we can assume that this will happen.
 - We need to keep pushing, both for the physics case in the LHC as well as for funding. This is a task for all of us!
- Do we need to compromise on the scientific spec (e.g., 45°, location...)
 - Seems that there are 2 possible options with 90° or 45° rotation (with a second optical line) and either is achievable with some work
 - Reconsider 4L or 4R location for services
 - This is looking much more feasible than previously thought

Funding

- We need to identify all the cost components (not necessarily the actual number) needed to have our preferred v4 designs on both LHC beamlines
 - Gerhard listed hardware costs. We did not discuss in detail –we need to make sure this list is complete
 - Need to add manpower: design, R&D (instrument design, simulation)
- We need to assign these to our different possible resource sources
 - HL-UK(2-3), BI LS3 budgets, HL-WP13 envelope for profile and halo measurements
 - Add additional costs for LS3 delay to this list

Other actions from the meeting

- Make a list of prospective papers along with content (Hao)
 - Chase up the part-completed papers, also in the Friday meeting (Hao)
- Prepare a list of content for HL-UK3 (Ray, Carsten)
- Agree strategy for funding of HL-UK3 (Ray, Carsten)
- Extend the duration of the CERN collaboration with CI (Ray)
- Check the lifetime of the all-metal gas valves (Gerhard)
- Use the EBTS instrument to test gas density with the new, alternative skimmers on-order (Hao)
- Agree specification then propose technical solutions for a moveable gas jet for halo (Stefano, Gerhard)
- Consider design of a custom lens system and see potential improvements (Serban)
- What are the next 'targets' for improving the performance of the instrument? Halo in a higher intensity region? Integration time (why? For Ions?), other? (CERN)



BGC24-16



BGC24-9



Liam Corbett (External) was invited to the meeting.

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Thank you all for your
participation, excellent
presentations and discussions

Wishing you a safe trip home and a healthy and happy end of the year