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MuCol WP3 Proton Complex

WP Leader Name

Description of the Workpackage

This work package aims to define the most promising scheme for the linac, accumulator and compressor rings and prepare a comprehensive summary of the current technology and possible R&D topics of importance¹ for the proton complex. A self-consistent parameter set will be developed to determine the input beam conditions for the muon complex², based on known technological limitations.

1. High-gradient RF structures and systems, LDG R&D report.
2. Bright muon beams and muon colliders, LDG R&D report.

Description of the tasks

Task 3.1 – Coordination and Communication (ESS)

- This task provides the overall coordination of the activity and the communication of its results. It will monitor work progress and inform the project management and work package participants, manage the WP budget and use of resources and prepare internal and deliverable reports. The task will also organise workshops and specialised working sessions, with attendance of invited participants from inside and outside the consortium.

Description of the tasks

Task 3.2 – High Power Linac (CERN and ESS)

- The goal of this task is to collect the parameters that can be used for a future design of a high-power H- linac to be used as the driver of the proton complex. This collection will be based on inputs from ESS and the SPL/LINAC4 designs and may include: source type, preliminary acceleration layout, beam dynamics and stability considerations and chopping schemes. Consideration will be given of the need for additional acceleration after the linac in order to reach the required beam power. The parameters will be used to provide input on final beam parameters for task 3.3.

Description of the tasks

Task 3.3 – Accumulator and Compressor rings (ESS, UU and CERN)

- The goal of this task is to provide a self-consistent collection of parameters to be used in the design of a future compressor ring. The ring will create the high intensity short bunches that will be delivered to the target for muon production. With the input of WP4 (target and cooling) and task 3.2 participants a set of beam parameters will be defined. A preliminary design of the rings will be developed including accumulation and compression strategy, preliminary lattice and injection and extraction considerations. Further R&D needs will be outlined. Preliminary study of intensity-based effects such as space charge, single-bunch and impedance effects will be carried out for the compressor ring.

Table 3.1b

Work package number	3		Lead beneficiary				
Work package title	Proton Complex						
Participant number	1	2	3				
Short name of participant	ESS	UU	CERN				
Person months per participant:	21	20	6				
Start month	1			End month	48		

Table 3.1c

Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date (in months)
3.1	Final report on parameters and initial study for the Proton Complex	3	ESS/UU/CERN	R		46

Table 3.1d List of Deliverables

Milestone number	Milestone name	Related work package(s)	Due date (in month)	Means of verification
3.1	Update for the proton complex parameters and review with WP4	3/4	12	
3.2	Preliminary report on the linac and accumulator work	3	36	

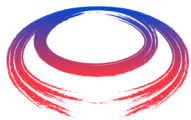
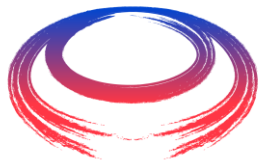


Table 3.1e: Critical risks for implementation

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Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
Unilateral withdrawal of key partner(s) (Low level).		Other partners will take over responsibility and, ultimately, the remaining participants will find the necessary resources to compensate.
Significant delay on deliverables (Medium level).		Early warning is already foreseen to be given. If more manpower is needed the WP must find the way to reallocate resources. If other deliverables are affected the management have to propose ways to overcome the problem.
Incompatibilities in studies from different tasks (Low Level)	WP3	The WP leader will find a way to accommodates needs on the studies between tasks in a way the interfaces connect and make sense
In the course of the study we find that a certain parameter required by the target (WP4) cannot be achieved (Medium Level)	WP3/WP4	The WP will find a way to increase communication in order to clarify the needs from both WP3 and WP4. Regular meetings between the involved people will be set up in order to find a compromise and a solution to the issue.



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*Thank you
for attention*