



WP4 - Status and Plans Towards Endorsement

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PREPARATIVE WORK

CERN-MoU-yyyy-xxx

Memorandum of Understanding

DRD1 Collaboration

DRD1 Work Package Annexes after DRD1 Endorsement

In this section the DRD1 Annexes of Work Packages after the DRD1 full endorsement process (as described in annexed 6.1-6.3 are present.

DRAFT 5

WP4 – TRACKING TPCs

Task ID	Task	Performance Goal	ECFA DRD Theme
T1	IBF reduction	Further developments and studies aiming to reductions of $\text{gain} \times \text{IBF} < 1-5$	1.1, 1.2, 1.3, 1.4
T2	<u>PixelTPC</u> development	Study in more detail various approaches to the pad plane configuration and its amplification structures optimized with respect to resolution and the IBF.	
T3	Optimization of the amplification stage and its mechanical structure, and development of low X/X0 field cages (FC)	Implementing new ideas already developed and further investigate the increase of the homogeneity of the field cage (FC) and to lower the material budget of its components.	
T4	FEE for TPCs	To develop an SRS-based readout system for smaller scale experiments and test setups with different types of TPCs. Also, development of low power electronics and Front-End Electronics cooling	
T5	Gas mixture	Studies of new gases suitable for different TPC applications. A particular attention will be given to a low environmental impact (e.g. low GWP) and the effect of varying the gas pressure.	

What we offer:

DELIVERABLES and MILESTONES

Milestones and Deliverables	Title	Description	Start Date	End Date	Institutions
M4.1.1	Construction MPGD-TPC	Demonstrator MPGD-TPC and its production.	0	12M	FI-HIP, DE-UNI-BONN, CH-PSI
M4.1.2	Testing of MPGD-TPC	Demonstrator including readout structure and electronics ready for test beam.	12M	24M	DE-UNI-BONN, FI-HIP, CH-PSI
D4.1	Operation with MPGD-TPC	Demonstrator of MPGD-TPC commissioned for studies of tracking performance at high rates using different types of amplification stages and readout electronics.	0	36M	CZ-CTU, FI-HIP, DE-TU-DARMSTADT, DE-GSI, DE-UNI-BONN, CH-CERN, CH-PSI

M4.2.1	IBF setup	Building a demonstrator for the measurements of IBF and its commissioning.	0	12M	CA-UCARLETON, FI-HIP,
M4.2.2	Highly Pixelized structures	Construction of new highly pixelized readout structures.	12M	24M	FI-HIP DE-UNI-BONN, CH-PSI
D4.2	Operation of a highly pixelized TPC	Demonstrator of a TPC for studies of tracking performance at high rates using highly pixelized readout structures.	0	36M	CA-UCARLETON, FI-HIP DE-UNI-BONN, DE-TU-DARMSTADT, CH-CERN, CH-PSI

CONTACTING INSTITUTIONS

We have two rounds of contacts with all the institutions who expressed interest in participation on the Work Group 4

1. In the first round the feedback was very weak. A total of three (3) institutions gave feedback

1. In the second more activity was noticed and this was thanks to the very explained conditions for participation in the EU Roadmap. A total of six (6) institutions provided prompt feedback

Who we are:

At this very moment:

7.4.4.3 Participating Institutions

Country	Collaborating Institution	Town	Contact	Deliverables
Brazil	Universidade de São Paulo (BR-IFUSP)	São Paulo	Marco BREGANT	D4.1
Canada	Carleton University (CA-UCARLETON)	Ottawa	Jesse Heilmann	D4.1, D4.2
China	Institute of High Energy Physics (CN-IHSP-CAS)	Beijing	Huirong Qi	D4.1, D4.2
China	Tsinghua University (CN-UTSINGHUA)	Beijing	Zhi Deng	D4.1
Czech Republic	Czech technical university (CZ-CTU)	Prague	Hugo Ferreira	D4.1
Finland	Helsinki Institute of Physics (FI-HIP)	Helsinki	Francisco Garcia	D4.1, D4.2
France	IRFU, CEA, University Paris-Saclay (FR-IRFU-CEA)	Saclay	Esther Ferrer Ribas	D4.1
Germany	University of Bonn (DE-UNI-BONN)	Bonn	Jochen Kaminski	D4.1, D4.2
Germany	Technische Universität Darmstadt, Institut für Kernphysik (DE-TU-DARMSTADT)	Darmstadt	Alexandre Obertelli	D4.1, D4.2
Germany	GSI Helmholtzzentrum für Schwerionenforschung (DE-GSI)	Darmstadt	Bernd Voss	D4.1
Hungary	Wigner Research Centre for Physics (HU-HUN-REN)	Budapest	Dezso Varga	D4.1
Italy	INFN Sezione di Bari (IT-INFN-BA)	Bari	Emilio Radicioni	D4.1, D4.2
Italy	INFN Sezione di Roma (IT-INFN.RM1)	Roma	Francesco Renga	D4.1, D4.2
Japan	Iwate University (JP-IWATE-U)	Morioka	Shinya Narita	D4.1
Switzerland	European Organisation for Nuclear Research (CH-CERN)	Geneva	Lucian Scharenberg	D4.1, D4.2
Switzerland	Paul Scherrer Institut (CH-PSI)	Villigen	Michael Heiss	D4.1, D4.2

And the Contributions:

7.4.4.5 Contributions of Participating Institutions to the Work Package^c

After the first scientific and resource endorsement of the Work Package by the Collaboration Board, cost and person-power estimations for the lifetime of each deliverable will be updated according to the following table.

Deliverable	Institution	Investment (kCHF)	Person Power ^d (FTE/y)
D1	FI-HIP, BONN, CH-CERN, CH-PSI	40	10.0
D2	FI-HIP, BONN, CH-CERN, CH-PSI	73	12.2
D Total		113	22.2

NOT PRESENT AT THE MoU Signature (SCB, RCB and CB Endorsement Required) – The level of details that will be shown in the table will be discussed with CERN, involved Institutes and WP Funding Agencies before the signature of the MoU.

SUMMARY

1. We expect more institutions will come back with the information requested.
2. For the Moment some institutions didn't provided the amount of investment in money and man-power. We encourage to all provide these figures.
3. Very important for the Founding Agencies to see that your activity is enclosed in the Roadmap for future facilities, therefore the participation is worth it.