	EUROPEAN COMMISSION RESEARCH AND INNOVATION DG	Review Report

Project No: 283286

Project Acronym: HadronPhysics3

Project Full Name: Study of Strongly Interacting Matter

Review Report

Period covered: from 01/01/2012 **to** 30/06/2013

Start date of project: 01/01/2012

Duration: 36

Project coordinator name:
Dr. Carlo Guaraldo

Version: 0

Date of preparation: 18/11/2013

Date of submission (SESAM): 30/06/2014

Project coordinator organisation name:
ISTITUTO NAZIONALE DI FISICA NUCLEARE

Review Report

General Information

Grant Agreement number:	283286
Project acronym:	HadronPhysics3
Project title:	Study of Strongly Interacting Matter
Funding Scheme:	FP7-CP-CSA-Infra
Project starting date:	01/01/2012
Project duration:	36
Name of the scientific representative of the project's coordinator and organisation:	Dr. Carlo Guaraldo ISTITUTO NAZIONALE DI FISICA NUCLEARE
Project web site:	
Type of technical review:	Periodic regular/foreseen technical review
Period covered - from:	01/01/2012
Period covered - to:	30/06/2013
Date of review meeting (if applicable):	18/10/2013
Type of review report:	Individual
Name of expert drafting the report:	Sebastian JESTER
Name of the Project Officer:	Mr Sebastian JESTER

1. Overall Assessment

a. Executive summary: Comments, in particular highlighting the scientific/technical achievements of the project, its contribution to the State of the Art and its impact:

The project encompasses the greater part of the hadron physics community in Europe, with substantial international contributions. Considering that there are 29 Work Packages and the project runs over three years, the EC contribution of 9 million Euro breaks down to about 100.000 Euro per year and Work Package, or about 2.000 Euro on average for each of the 49 participants per Work Package and year. The greatest success of the project is therefore the leverage to achieve a significant coordinating effect even with such a low amount of funding per Work Package, year and participant.

Progress	Good progress (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations)

b. Overall recommendations (e.g. on overall modifications, corrective actions at WP level, or re-tuning the objectives to optimise the impact or keep up with the State of the Art, or for other reasons, like best use of resources, re-focusing...).

The description of the Networking Activities in the Description of Work and in the periodic report raises the impression that they are in fact considered as Joint Research Activities within the project: the focus of the reporting is on the scientific results, rather than on the outcome of specific networking activities and events.

Facilitating excellent science is of course the of all Integrating Activities. However according to the Work Programme 2011, in response to which this action was funded, the specific aim of networking activity Work Packages is "To foster a culture of co-operation between the participants in the project and the scientific communities benefiting from the research infrastructures and to help developing a more efficient and attractive European Research Area", with the related evaluation criterion: "The extent to which the co-ordination mechanisms will foster a culture of co-operation between the participants, and enhance the services to the users."

While the scientific results are highly desirable, they should be considered as an indirect result of the project, to be brought about by the desired direct impact: "a structuring impact on the European Research Area and on the way research infrastructures operate, evolve and interact with similar infrastructures and with their users". The project could therefore consider focusing the reporting on the Networking Activities on highlight how the activities funded by the project brought about a closer co-ordination between participants and the wider community. In particular, future reports should explain in detail how the project's networking activities "enhance the services to the users", and how the above-mentioned desired direct impact of Integrating Activities is brought about.

2. Objectives and Workplan

a. Progress towards project objectives: Have the objectives for the period been achieved? In particular, has the project as a whole been making satisfactory progress in relation to the Description of Work (Annex I to the grant agreement)?	Yes

Comments

Excellent progress overall.

b. Progress in individual work packages: Has each work package (WP) been making satisfactory progress in relation to the Description of Work (Annex I of the grant agreement)?	Yes

Comments
Any deviations are minor compared to the scope of the entire project, and respond to changing external circumstances, unanticipated difficulties, or new opportunities for higher impact.

c. Milestones and deliverables: Have planned milestones and deliverables been achieved for the reporting period?	Yes

Comments
Some deviations in delivery dates that have been justified.

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
1	1	1.0	Implementation of the management structure of the project	Yes	Accepted	
1	2	2.0	Creation of the project website	Yes	Accepted	
1	3	1.0	First Periodic Report	No		Periodic reports are reviewed separately and not considered here.
1	4	0.0	Second Periodic Report	No		
1	5	0.0	Final Report	No		
1	6	0.0	Report on the distribution of the European Union financial contribution between beneficiaries	No		
2	1	1.0	Computer programs for interpretation of experimental results	Yes	Accepted	
2	2	1.0	Computer programs for interpretation of experimental results	Yes	Accepted	
2	3	1.0	Computer programs for interpretation of experimental results	Yes	Accepted	
2	4	0.0	Computer programs for interpretation of experimental results	No		
2	5	0.0	Computer programs for interpretation of experimental results	No		
2	6	0.0	Computer programs for interpretation of experimental results	No		
2	7	1.0	Proceedings I Workshop 2013	Yes	Accepted	
2	8	0.0	Proceedings II Workshop 2014	No		
3	1	0.0	Computer programs for simulation and analysis	No		
3	2	0.0	Report on analysis results on benchmark channels	No		
3	3	0.0	ENC Physics book	No		
3	4	0.0	Report on the lattice configuration of the electron ring	No		
3	5	0.0	Report on results on beam life	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			time and polarization lifetime			
3	6	0.0	Conceptual design report for the electron ring and the interaction zone	No		
4	1	1.0	Reports on topical meetings on tasks 1, 2, 3, 4	Yes	Accepted	
4	2	1.0	Reports on topical meetings on Tasks 1, 2, 3, 4	Yes	Accepted	
4	3	0.0	Reports on topical meetings on Tasks 1, 2, 3, 4	No		
4	4	0.0	Precision calculations in strong in teractions	No		
4	5	0.0	Multi-quark and multi-hadron s tates calculations	No		
4	6	0.0	Lattice methods and applications	No		
4	7	0.0	Nuclear matter and phase of QCD calculations	No		
5	1	1.0	"Summer camp" for students	Yes	Accepted	
5	2	1.0	Data base on light mesons decays	Yes	Accepted	
5	3	1.0	Proceedings Workshop on "Light mesons physics"	Yes	Accepted	
5	4	0.0	Reports on topical meetings	No		
5	5	0.0	Proceedings Workshop on "Futur e prospects of light meson phy sics"	No		
6	1	0.0	Report on neutron detector for KAOS/A1 and HypHI	No		
6	2	0.0	Technical report on tracking and trigger systems for HypHI	No		
6	3	0.0	Technical report on HPGe cluster detector for PANDA	No		
7	1	0.0	PANDA detector design	No		Delayed due to circumstances beyond the control of the project.

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
7	2	0.0	CBM detector design	No		Delayed due to circumstances beyond the control of the project.
7	3	1.0	Technical design reports on R&D on detectors, FEE and DAQ	Yes	Accepted	
7	4	0.0	Construction and tests of prot otypes	No		
7	5	0.0	Reports on topical workshops	No		
8	1	0.0	Proceedings "I Workshop theory - experiment"	No		
8	2	0.0	Proceedings "II Workshop theory - experiment"	No		
9	1	2.0	SIDDHARTA-2 setup completed and ready for installation	Yes	Accepted	
9	2	0.0	Precision data on hadronic atoms	No		
9	3	0.0	Theory results on low-energy a ntikaon-nucleon interaction	No		
9	4	0.0	Report on sub-threshold resona nces	No		
9	5	0.0	Results of dedicated experiments on the search of deeply bound ka onic nuclear states	No		
10	1	0.0	Text book "Lattice QCD"	No		Delayed due to circumstances beyond the control of the project.
10	2	0.0	Computer code for multi-core m achines and GPUs	No		
10	3	0.0	Report on low-energy constants for mesons and baryons	No		
10	4	0.0	Report on meson and baryon res onances	No		
10	5	0.0	Report on "Physics beyond the Standard Model"	No		
10	6	0.0	QCD phase diagram calculations	No		
10	7	0.0	Reports on Topical Workshops	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
11	1	2.0	Transnational Access provision - multi annual implementation plan over 18 months.	Yes	Accepted	
11	2	0.0	Transnational Access provision - multi annual implementation plan over 36 months	No		
12	1	1.0	Transnational Access provision - multi annual implementation plan over 18 months	Yes	Accepted	
12	2	0.0	Transnational Access provision - multi annual implementation plan over 36 months	No		
13	1	1.0	Transnational Access provision - multi annual implementation plan over 18 months	Yes	Accepted	
13	2	0.0	Transnational Access provision - multi annual implementation plan over 36 months	No		
14	1	1.0	Transnational Access provision - multi annual implementation plan over 18 months	Yes	Accepted	
14	2	0.0	Transnational Access provision - multi annual implementation plan over 36 months	No		
15	1	1.0	Transnational Access provision - multi annual implementation plan over 18 months	Yes	Accepted	
15	2	0.0	Transnational Access provision - multi annual implementation plan over 36 months	No		
16	1	2.0	Optimization of pad assemblies with new single-channel ampli fiers using #- and #-sources	Yes	Accepted	
16	2	0.0	Optimization of pad assemblies with new single channel ampli fiers using hi and p beams	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
16	3	0.0	Pad assemblies with new single -channel low capacitance broad band amplifier (LCBA) signal readout	No		
16	4	0.0	3x3 cm**2 Dia-on-Ir samples of low dislocation density	No		
16	5	0.0	One-dimensional microstrip ass emblies with PADI-4 signal rea dout	No		
17	1	2.0	Report on the production of pr ototypes of low mass polarizing solenoids for DNP at high fields	Yes	Accepted	
17	2	0.0	Prototypes of low mass polarizing solenoids for DNP at high fields for ELSA and MAMI experiment s	No		
17	3	0.0	Design of low mass polarized t arget system for GPD measureme nts with COMPASS	No		
18	1	0.0	Assessment of the QE of improv ed MWCNT	No		
18	2	1.0	Full characterization of a small si ze prototype of a photon detector with MPGD architecture	Yes	Accepted	
18	3	0.0	Full characterization of a large si ze prototype of a photon detector with MPGD architecture fully eq uipped with read-pout electronics	No		
19	1	2.0	Report on the implementation of large-area, high granularity, two dimensional position sensitive TRD	Yes	Accepted	
19	2	0.0	Large-area, high granularity, two-dimensional TRD prototypes	No		
19	3	0.0	Operational high-rate RPC	No		
20	1	0.0	New nozzle production line for	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			cluster-jet targets			
20	2	0.0	Report on measurements of micr o-jet instabilities and fluctuations of target density	No		
20	3	0.0	Report on laser induced breakup of liquid hydrogen in pellet target	No		
20	4	1.0	Report on production of smallest diameters and highest frequencies in pellet beam sources	Yes	Accepted	
20	5	0.0	Prototype of an optical tracking system of individual pellets based on lasers and line scan cameras	No		
21	1	0.0	Prototypes for photon detection devices with new amplification st ructures	No		
21	2	2.0	Prototype for the study of dispersi on effects in the DIRC for WASA at COSY	Yes	Accepted	
21	3	0.0	Installation and commissioning of the DIRC for WASA at COSY	No		
22	1	1.0	Report on the optimization of the growing technology and characte rization of fibers	Yes	Accepted	
22	2	0.0	Production of LYSO:Ce fibers of different diameters and of quality similar to bulk crystals	No		
22	3	0.0	Production of fibers bundles m ade of LYSO:Ce	No		
23	1	0.0	Report on the development of s ilicon-based multi-pixel photon detectors	No		
23	2	0.0	Characterization of silicon-based multi-pixel photon detectors for RPD and ECALO of COMPASS II	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
23	3	0.0	Report on the implementation of a TIGER module for the RPD of COMPASS II	No		
23	4	0.0	Development of a TIGER module for a trigger	No		
23	5	0.0	Production of a prototype RPD for COMPASS II	No		
23	6	0.0	Design for an ASIC for the FEE of the Central Tracker of CLA S12	No		
23	7	0.0	Prototype of the Central Neutron Detector of CLAS12	No		
23	8	0.0	Technical Design Report for the Forward Tagger of CLASS12	No		
24	1	0.0	Prototype hydrogen TPC	No		
24	2	0.0	Report on the streching technique to produce large-area GEM foils	No		
24	3	0.0	Prototype large area planar GEM	No		
24	4	0.0	Prototype large TPC with full readout	No		
25	1	2.0	Report on the development of a concept for low-# section for AD	Yes	Accepted	
25	2	0.0	Report on experimental setup c ommissioning for the AD at COS Y	No		
25	3	0.0	Design and commissioning of a Siberian snake at COSY	No		
25	4	0.0	Final report including the first sp in-filtering studies at COSY	No		
26	1	0.0	Report on full-size high-density fr ont-end board compatible with the CBM micro-strip tracking s ystem	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
26	2	0.0	Demonstrator of a fully integrated FEB with the high density input stage	No		
26	3	0.0	Report on the low-power, low-mass front-end module based on ASIC and Al cables	No		
26	4	0.0	Report on the performance under test beam of a prototype silicon embedded chip assembly	No		
27	1	0.0	High Level Trigger implementation for correlation measurements	No		
27	2	0.0	Theoretical model developments and modelizations in Monte Carlo	No		
27	3	0.0	Results on Di-Jet and γ-jet reconstruction in heavy ion collisions	No		
28	1	0.0	64-pixel photo sensor matrix for working in high magnetic fields	No		
28	2	0.0	SiPM coupling to advanced fiber detectors	No		
28	3	0.0	SciTil plastic scintillator detector for TOF applications	No		
29	1	0.0	CLAS12 RICH prototype	No		
29	2	0.0	RICH Technical Design Report	No		
29	3	0.0	Report on the fundamental properties of TMDs	No		
29	4	0.0	Report on global analyses of TMDs	No		
29	5	0.0	Data base for TMDs	No		
29	6	0.0	Reports on topical workshops	No		

d. Relevance of the objectives in the coming periods: Are the objectives for the coming period(s) i) still relevant and ii) still achievable within the time and resources available to the project?	
d.i) still relevant?	Yes
d.ii) still achievable?	Yes
Comments	
The project remains highly relevant overall, in particular because it has been responding to new challenges and opportunities as necessary. Individual subtasks of certain Work Projects may not in fact be achievable any more due to circumstances beyond the control of the project; for example, decisions by the WASA collaboration have affected the scope of WP 21 (deliverable 21.2). The project has responded appropriately by redefining Work Packages in order to ensure an efficient and effective use of resources. The project has responded appropriately to such changes.	

3. Resources

a. Assessment of the use of resources: To the best of your estimate, have resources used, i.e. personnel resources and other major cost items, been (i) utilised for achieving the progress, (ii) in a manner consistent with the principle of economy, efficiency and effectiveness. Note that both aspects (i) and (ii) have to be covered in the answer.	
a.i) utilised for achieving progress	Yes
a.ii) in a manner consistent with the principle of economy, efficiency and effectiveness	Yes
Comments	
There are no indications to the contrary. See in addition the comment to 2.d.ii) above.	
b. Deviations: If applicable, please comment on large deviations with respect to the planned resources.	
No such deviations.	

4. Implementation of the Project

a. Management: Has the project management been performed as required?	Yes
Comments	
Project management is very experienced, the report structure could serve as a best-practice example.	
b. Collaboration between beneficiaries: Has the collaboration between the beneficiaries been effective?	Yes
Comments	
The field is a highly interactive and collaborative one to begin with, and beneficiaries have collaborated as envisaged in the description of work.	
c. Beneficiaries' roles: Do you identify evidence of underperforming beneficiaries, lack of commitment or change of interest of any beneficiaries?	Partially
Comments	

All the beneficiaries have participated in their respective Work Packages. Many beneficiaries have even committed additional personnel resources compared to those stipulated in the Description of Work.

5. Use and Dissemination of Foreground

a. Impact: Is there evidence that the project has/will produce significant scientific, technical, commercial, social, or environmental impacts?	Yes

Comments

a.1. Is there an impact on participating Small and Medium Entreprises (SMEs)?	Not Applicable

Comments

a.2. Is there an exploitation potential for the participating SMEs?	Not Applicable

Comments

b. Use of results: Is the plan for the use of foreground, including any update, appropriate? Namely, please comment on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiary or groups of beneficiaries and its progress to date.	Yes

Comments

Project results are published appropriately through the usual channels for scientific publications. The project has made some interesting steps regarding public outreach, for example through youtube videos presenting individual researchers and their work. The impact of these videos could be strengthened by exchanging experiences and best practices with projects or institutions that have more experience in this regard.

c. Dissemination: Have the beneficiaries disseminated project results and information adequately (publications, conferences...)?	Yes

Comments

The project has an impressive publications record and is highly visible in the community.

d. Please identify potential information that should be disseminated to

Policy makers:

The scientific community:

The general public:

A specific group of end users:

e. Involvement of potential users and stakeholders: Are potential users and other stakeholders (outside the consortium) suitably involved (if applicable)?	Not Applicable
Comments	
f. Links with other projects and/or programmes: Is the consortium interacting in a satisfactory manner with other related Framework Programme projects or other Research and Development national/international programmes, standardisation bodies?	Partially
Comments	
The project is highly integrated with national research programmes in the field. As the project has explained during the review meeting, there is little interaction with the nuclear physics community (integrating activity ENSAR) in spite of certain aspects of the fields being related; this is difficult to overcome for reasons that might be described more as sociological ones.	

6. Other Issues

a. Have policy-related and/or regulatory issues been properly handled (if applicable)?	Not Applicable
Comments	
b. Have ethical issues been appropriately handled (if applicable)?	Not Applicable
Comments	
c. Have safety issues been properly handled (if applicable)?	Yes
Comments	
d. Has progress on Gender Equality Actions been satisfactory (if applicable for this reporting period)?	Not Applicable
Comments	

7. Flag the Project - Not related to the 'certified as correct'

Flag(s) for the project	Yes
Highlight as a success/case story	No
High visibility/media attractive project	No
Substantial R&D breakthrough character	No
Project linked to R&D national/international programmes	No
Project with an impact on EU policies	No

Project with an impact on pushing Joint Programming (especially for ERA-NET)	No
Outstanding Use/Exploitation of results	No
Significant R&D participation from outside EU	Yes
Involvement of non-RTD actors in the field (economic, policy makers, civil society, end-users, standardisation bodies…)	No
Good innovation potential	No
Other	No
Comments	

Attachments	
Name	
Date	

This declaration was visaed electronically by Sebastian JESTER (ECAS user name jestese) on 30/06/2014