Submitted ANR project

CALIIMAX-HEP

CALorimètre Intégré pour une
approche IMAgeur des futures
eXpériences HEP

Imaging calorimetry for the future HEP experiments

Tasks

Nb.	Task name	Contributors (ordered)
0	Coordination	LLR
1	Detector integration & performance tests	LAL, LLR
2	Sensors	LLR
3	Power pulsing	LAL, LLR
4	System optimization	LLR, LAL
5	Information system	LAL, LLR

Task 1		Detector integration & performance tests	
Task Manager:	Partners:		Duration:
R. Poeschl	**LAL** **LLR**		**3 years**
Resources asked for:	Main Subtasks:		
100 k€ **2 FTE.yr** **17 k€ missions**	Integration Test campaigns Reporting		
Aims:			Contributors:
1 2 3 4 5	Enabling the full data acquisition system Delivery of calibrated detection modules Organization of test campaigns Experimental data analysis Reporting		LLR LAL, LLR LAL LAL, LLR LAL, LLR
Deliverables:			Date:
1 2	Technical documentation Physics report		August 2013 August 2013
Milestones:			Date:
1 2 3	Validation of the assembly procedure Data acquisition system enabled Reports issued		October 2011 October 2011 August 2013
Critical issues:			
1 2 3 4	Availability of sensors Bonding of microchips Testing of microchips Yield after assembly		
Risk analysis:			Risk level:

Task 2	Sensors			Task 3	Power Pulsing		
Task Manager:	Partners:		Duration:	Task Manager:	Partners:		Duration:
R. Cornat	**LLR**		**2.5 years**	**Ch. de la Taille**	**LAL** **LLR**		**2 years**
Resources asked for:	Main Subtasks:			Resources asked for:	Main Subtasks:		
30 k€ **1.5 PhD student.yr**	Simulation Prototyping Tech. validation			**10 k€** **1.5 PhD student.yr**	Design of a test setup Measurement campaigns		
Aims:		Contributors:		Aims:		Contributors:	
1 2 3	Study of the edge termination structures of the sensors to optimize the dead area and the crosstalk Specification and validation of a transferrable technological process Experimental tests of the new sensors	LLR LLR LLR		1 2	Qualification of the detector modules in high magnetic field environment Specification of a robust design of the detector (if necessary)	LAL, LLR LAL	
Deliverables:		Date:		Deliverables:		Date:	
1 2	Simulation and test reports Specifications of the industrial process		February 2013	1 2	Test reports Engineering documents		December 2012
Milestones:		Date:		Milestones:		Date:	
1	Validation of a transferable manufacturing process of the sensors		February 2013	1	Test setup Reporting		August 2011 December 2012
Critical issues:				Critical issues:			
1 2 3	Control the current leakage of individual diodes (DC coupled electronics) Uniformity Low wideness termination structure absorbing the bias voltage			1 2	Pulsed current calls in a high magnetic field environment Mechanical robustness		
Risk analysis:		Risk level:		Risk analysis:		Risk level:	
1 2	Viability of R&D results (cost, integration,...) Sensor specification (Breakdown, leakage) not fulfilled		Moderate Moderate				

LLR V7 17/10, RC

Task 4 — System optimisation

Task Manager:	Partners:	Duration:
D. Jeans	LLR LAL LETI	3 years

Resources asked for:	Resources brought:	Main Subtasks:
2 k€ missions		Study Reporting

Aims:		Contributors:
1	Identify the parameters of a system level optimization	LLR
2	Evaluation of the impact of the possible optimization	LLR, LAL, LETI
3	according to physics performance, industrial feasibility and overall cost	LLR
4	Enlargement of the potential partners	LLR
	Reporting on a possible scenario, development and manufacturing model	

Deliverables:		Date:
1	Specifications of an optimized design	August 2013
2	Report on costing	
3	Development and manufacturing model	

Milestones:		Date:
1	Readiness for the final joint reporting	August 2013

Critical issues:		
1	Access to information	
2	Complexity of the optimization problem	
3	Accretion of potential partners	

Risk analysis:	Risk level:

Task 5 — Information System

Task Manager:	Partners:	Duration:
V. Boudry	LLR LAL	3 years

Resources asked for:	Resources brought:	Main Subtasks:
8 k€ missions		Implementation Maintenance Communication

Aims:		Contributors:
1	Implementation of IT tools for the project and data management	LLR, LAL
2	Specification of data format	LLR, LAL
3	Valorization of the results and databases	

Deliverables:		Date:
1	Experimental data database	August 2013
2	Knowledge database	
3	User documentation	
4	Publications	

Milestones:		Date:
1	Availability of IT tools	October 2011

Critical issues:		
1	Concurrent setting up with production of knowledge	
2	Specification of accessibility	

Risk analysis:	Risk level:

Top level Milestones			
Nb.	Name	Task: criteria	Responsible / Date
1	**End of setting up**		**October 2011**
		1: Readiness of the detector and of the data acquisition system	LAL: R. Poeschl
		2: Bibliography and simulation	LLR: R. Cornat
		3: Specification of experimental setup	LAL: C. de la Taille
		4: Identification of model parameters	LLR: D. Jeans
		5: IT Services specified and enabled	LLR : V. Boudry
2	**End of elaboration**		**August 2013**
		1: Analysis of experimental data done	LAL: R. Poeschl
		2: Validation of a transferable manufacturing process of the sensors	LLR: R. Cornat
		3: Evaluation of the sensitivity to the magnetic field	LAL: C. de la Taille
		4: Readiness for the final joint reporting	LLR: D. Jeans
		5: Data format, identified users	LLR : V. Boudry
3	**End of project**		**January 2014**
		1, 2, 3, 4: final reports and development models are written 5: knowledge database filled	Project/partner coordinators

			TVA non incluse		Task 0	Task 1	Task 2	Task 3	Rask 4	Task 5	
APPORT	Sous Trait.	LLR	50 000 €	*1+0.196*0.8			50 000 €				Wafers
	Materiel	LAL	20 000 €	*1+0.196*0.8		20 000 €					Clean room
	Missions	LLR	32 000 €			12 000 €			4 000 €	16 000 €	
	Missions	LAL	41 800 €			37 600 €		4 200 €			
TOTAL			143 800 €	143 800 €	0 €	69 600 €	50 000 €	4 200 €	4 000 €	16 000 €	

			TVA non incluse		Task 0	Task 1	Task 2	Task 3	Rask 4	Task 5
DEMANDES	Sous traitance LAL		45 000 €	*1+0.196*0.8		35 000 €		10 000 €		
	Sous traitance LLR		95 000 €	*1+0.196*0.8		65 000 €	30 000 €			
	RH	LAL/LLR	197 000 €			98 000 €	49 500 €	49 500 €		
	Missions	LAL	13 000 €			11 000 €		2 000 €		
	Missions	LLR	16 000 €			6 000 €			2 000 €	8 000 €
TOTAL			366 000 €	366 000 €	0 €	215 000 €	79 500 €	61 500 €	2 000 €	8 000 €

2yr post doc physics

PhD. Student Instrumentation

- Selection process until june

- Negotiation (if selected) at the end of summer

- Start of project : ~ november

Cross the fingers

Probability of success : 12%