

WP 9 Instrumentation: Detectors

Project Outline

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Cosener's House Abingdon
13-14 January 2016

AIMS

Develop neutron detectors for reflectometry applications relevant to the ESS

Spatial resolution 1 – 3 mm

Time resolution better than 100 μ s

Local instantaneous rate capability of several kHz/mm²

FUNDED PARTNERS

1.2M Euro over 4 years

STFC (Co-ordinator)

Juelich

ILL

CEA

ESS

CTU Delft

PSI

LIP

TUM

OTHER INTERESTED PARTIES

CNR Milano, ENEA, CNR Perugia, MTA EK, CSIC, HZG, ESS Bilbao,

TASKS

- **Task 9.1: Involvement of industry and the wider European neutron and muon detector communities in detector development**
- **Task 9.2: Development of scintillation detectors with high rate capability for reflectometry**
- **Task 9.3: ^3He based microstrip gas chamber with a novel 2D readout**
- **Task 9.4: Emergent Detector Technologies for neutron scattering and muon spectroscopy**
 - **9.4.1 $^{10}\text{B}_4\text{C}$ coated Resistive Plate Chambers for Position Sensitive Neutron Detectors**
 - **9.4.2 Silicon Photomultipliers for Neutron scattering**
 - **9.4.3 Silicon Photomultipliers for Muon Spectroscopy**
 - **9.4.4 Micromegas detectors**

TASK 9.1:

Involvement of industry and the wider European neutron and muon detector communities in detector development

- **Invite manufacturers of critical detector components to selected RTD meetings**
 - Common requirement and united approach gives more influence**
 - Eg Scintillator manufacturers – improve quality of products**
 - Feedthrough manufacturers – improve quality of products**
- **Would be manufacturers of detectors could be invited to selected RTD meetings**
 - Stimulate transfer of detector requirements to industry**
- **Invite detector personnel from groups outside RTD to participate in RTD meetings**
 - Promotes exchange and dissemination of information**

PSND 17, a possible forum for interaction

SINE2020 could actively support the workshop

Key performance indicators for WP9:

Number of commercial companies attending extended RTD meetings.

Number of detector developments taken up by industry.

WP 9: Deliverables

9.1	First extended RTD meeting	9	STFC	DEC	PU	18
9.2	Initial WLS fibre detector hardware	9	STFC	DEM	PU	18
9.3	Initial direct PMT readout hardware	9	FZJ	DEM	PU	24
9.4	Interim report on scintillation detector development programme	9	STFC	R	PU	24
9.5	Novel MSGC detector hardware	9	ILL	DEM	PU	24
9.6	Interim report on MSGC detector development programme	9	ILL	R	PU	24
9.7	Interim report on Emergent Neutron Detector Technologies development programme	9	ESS	R	PU	24
9.8	Report discussing an evaluation of commercial SiPMs for μ SR detector arrays	9	PSI	R	PU	24
9.9	Second extended RTD meeting	9	STFC	DEC	PU	36
9.10	Final report on scintillation detector development programme	9	STFC	R	PU	48
9.11	Final report on MSGC detector development programme	9	ILL	R	PU	48
9.12	Final report on Emergent Neutron Detector Technologies development programme	9	ESS	R	PU	48
9.13	Report discussing alternative detector technologies for μ SR	9	PSI	R	PU	48
9.14	Website containing all presentations	9	STFC	DEC	PU	48

Deliverables:

2 in Month 18

6 in Month 24

1 in Month 36

5 in month 48

Mid term review

Month 24 Sept 2017

Reports

Periodic reports Months 18 and 36

Final Report Month 48

Internal monitoring reports

Month 9 }1 page report by WP co-ordinator

Month 27 }

WP 9: Meetings

WP meetings should be held as far as possible as satellite meetings of the GA meetings

Cross fertilisation between WPs

KO meeting	Month 1	Oct 2015
GA meeting	Month 13	Oct 2016
GA Meeting	Month 31	Apr 2017
FGA Meeting	Month 45	Jun 2019
End	Month 48	Sept 2019

Imagined intermediate meetings just for WP9

Item for discussion at management meeting tomorrow

Advance Notice

Each beneficiary must ensure open access (free of charge online access for any user) to all peer reviewed scientific publications relating to its results. In particular, it must:

Open Access

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Grant acknowledgement

Mention for all publications/presentations/documents linked to SINE2020 (GA art. 29.4)

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 654000”.

Annex - Manual for WP leaders in SINE2020

Annex 3 Template for minutes of WP meetings

Work package (number / title)

Work package leader :

Venue :

Date :

Agenda :

List of participants

Name	email	Present (Y/N) & SIGNATURE

(evtl Photo)

Collect all power point presentations and make them available on the intranet (contact info@sine2020.eu)

Detailed points incl discussion and outcome

Agenda item 1

Agenda Item 2

Etc

Decisions taken ...

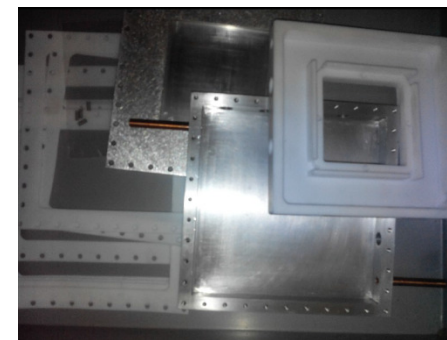
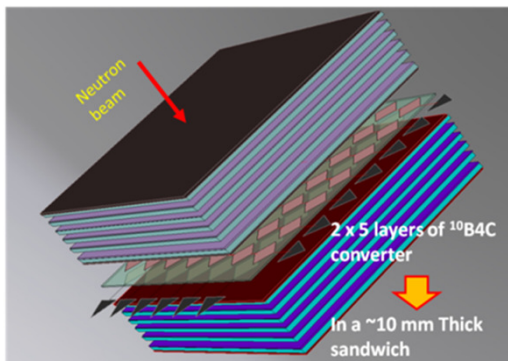
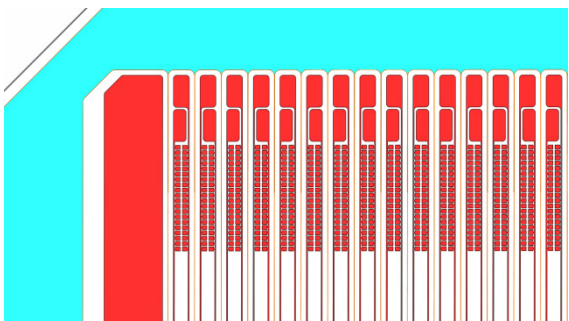
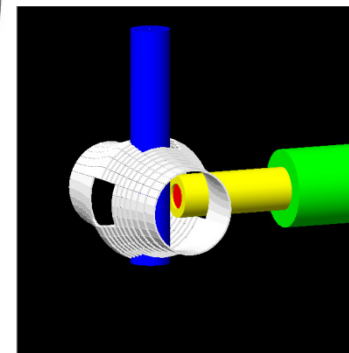
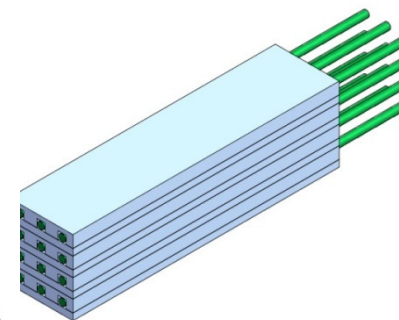
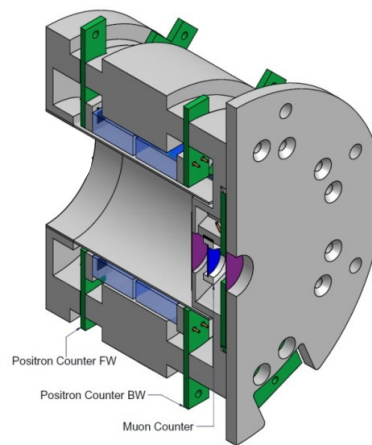
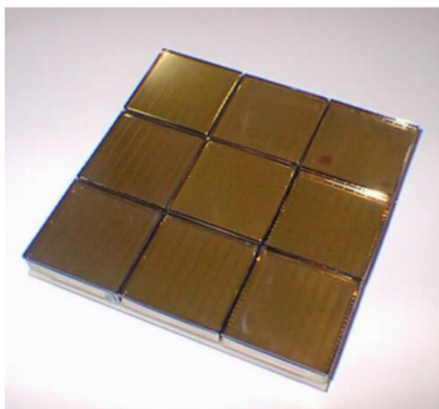
WP 9: Detector development

Dont get hung up on the admin

It's managable. Miriam and Ines work very hard for us

We have 1.2 m euro

There is a lot of exciting scinece to do



9 INSTRUMENTATION - DETECTORS

Acronym	Staff effort charged to project (man months)	mean staff cost/months	Staff cost	Sub-contract	Consumables	Travel	Equipment charged to project	Total Direct cost	Overhead	EU contribution
STFC	25	4 744	118 600	0	61 000	12 000	0	191 600	47 900	239 500
ILL	23	6 250	143 750		20 000	8 000		171 750	42 938	214 688
FZJ	16	6 807	108 912		16 000	8 000		132 912	33 228	166 140
TUD	9	5 640	50 760		7 000	8 000		65 760	16 440	82 200
ESS	4	7 000	28 000		0	8 000		36 000	9 000	45 000
LIP	15	5 000	75 000		10 000	8 000		93 000	23 250	116 250
PSI	16	7 400	118 400		15 000	12 000		145 400	36 350	181 750
CEA	13	5 848	76 024		10 000	8 000		94 024	23 506	117 530
TUM	3	6 710	20 130			8 000		28 130	7 033	35 163
TOTAL	124		739 576	0	139 000	80 000	0	958 576	239 644	1 198 220