PRESPEC

Memorandum of Understanding

1. Introduction

PRESPEC is a collaborative European project (hereinafter referred to as the "Project" or the "PRESPEC project") to construct and operate detector set-ups at the SIS/FRS facility at GSI for nuclear spectroscopy. It builds upon the successful RISING project and will employ equipment that was used in RISING as long as is appropriate. It is also aimed at preparing for the spectroscopy to be carried out with HISPEC/DESPEC at NUSTAR/FAIR by commissioning and employing components developed for HISPEC/DESPEC already at the SIS/FRS facility. It is also intended that AGATA detectors will be used at the SIS/FRS facility as part of PRESPEC.

This approach will further improve the detection capabilities for both in-beam and decay experiments with rare isotope beams and will enable both a rich physics programme at SIS/FRS before HISPEC/DESPEC are implemented at the Super-FRS facility at FAIR and the development of the HISPEC/DESPEC detector systems.

2. Parties to this MoU

This memorandum of understanding (hereinafter "MoU") is between the Parties to this MoU (hereinafter "the Parties"). These Parties are listed in Annexe A.1. The institutes or institutions forming the PRESPEC Collaboration are listed in Annexe A.2 (hereinafter "the Collaborating Institutions").

3. Purpose of this MoU

The purpose of this MoU is to specify what the Parties intend with respect to planning, funding, constructing and operating the PRESPEC project.

This MoU is the non-binding expression of the current intentions of the Parties. None of the Parties will be bound by any legal obligation to the other Parties or incur any associated expense.

The intention of the Parties and/or the Collaborating Institutions as appropriate is to provide the necessary equipment, as well as capital and human resources to carry out this project successfully.

The items forming the PRESPEC equipment, the provision of the required instrumentation, and the construction schedule for the Project is given in Annexe B.

It is further intended to bid for equipment from the relevant collaborations/committees. The conditions for commissioning and employing any such equipment will be defined in formal letters of agreement between the collaborations/committees and the PRESPEC Steering Committee.

Annexe C gives the operational costs for the Project.

The Parties agree to operate the PRESPEC set-ups in campaigns of experiments.

A formal letter of agreement between GSI as host and the PRESPEC Steering Committee, as defined in Annexe D, which represents the Parties, will detail the commitment of the Host and the obligations of PRESPEC for each campaign.

4. Commencement, Duration, Withdrawal and Extension of the MoU

This MoU will become effective on 1 September 2009 and shall continue in full force until 31 August 2013. This MoU may be extended only by an amendment to the MoU.

PRESPEC is an open collaboration. New members may accede to this MoU through a written procedure defined by the PRESPEC Steering Committee.

Any party may withdraw from the PRESPEC Collaboration by giving not less than twelve months notice in writing to the PRESPEC Steering Committee.

5. Organisation and Management

The PRESPEC organisation and the governance bodies for the construction and operation of PRESPEC are described in Annexe D.

6. Amendments and Modification of the MoU

This MoU may be amended or modified at any time in writing by mutual agreement and if voted for by at least two thirds of the Parties.

7. Associated documents

The following documents and annexes are an integral part of this MoU:

Annexe A:	List of Parties and Collaborating Institutions
Annexe B:	PRESPEC Equipment, Provisions and Installation
Annexe C:	PRESPEC Operation Costs
Annexe D:	PRESPEC Management Structure

Annexe A: List of Parties and Collaborating Institutions

Annexe A.1: List of Parties

Univ. Sofia, Bulgaria;

Univ. Jyväskylä, Department of Physics, Accelerator Laboratory, Finland;

GSI Helmholtzzentrum für Schwerionenforschung GmbH, IKP TU Darmstadt, IKP Univ. zu Köln, Germany;

Weizmann Institute, Rehovot, Israel;

Istituto Nazionale de Fisica Nucleare, Italy;

The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences, Heavy Ion Laboratory University of Warsaw, Poland;

Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH), Romania;

Ministerio de Ciencia e Innovación (MICINN), Spain;

Lund Univ., KTH Stockholm, Uppsala Univ., Sweden;

Ankara University, Turkey;

Univ. Brighton, STFC Daresbury Laboratory, Univ. Edinburgh, Univ. Liverpool, Univ.Manchester, Univ. Surrey, Univ. West of Scotland, Univ. York, UK;

Each Party is representing their own institutes or institutions and takes the institutional responsibility for the Project with the exception of Italy and Spain where each Party represents national institutions collaborating in the PRESPEC project. One UK party signs on behalf of all UK parties.

Annexe A.2

List of Collaborating Institutions:

Bulgaria:	Univ. Sofia, INRNE Sofia
Finland:	Univ. Jyväskylä, Department of Physics, Accelerator Laboratory
Germany:	GSI Darmstadt, TU Darmstadt, Univ. zu Köln
Israel:	Weizmann Institute, Rehovot
Italy:	INFN Legnaro, INFN Milano, INFN Padova
Poland:	The Henryk Niewodniczanski Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Heavy Ion Laboratory University of Warsaw
Romania:	IFIN-HH Bucharest
Spain:	Univ. Huelva, IEM Madrid, Univ. Salamanca, Univ. Santiago de Compostela, Univ. Sevilla, IFIC Valencia, CIEMAT, Univ. Politécnica Cataluña, Univ. Complutense de Madrid
Sweden:	Lund Univ., KTH Stockholm, Uppsala Univ.
Turkey:	Univ. Ankara
UK:	Univ. Brighton, STFC Daresbury Laboratory, Univ. Edinburgh, Univ. Liverpool, Univ. Manchester, Univ. Surrey, Univ. West of Scotland, Univ. York

Annexe B: PRESPEC Equipment, Provisions and Installation

Annexe B.1: Items provided for PRESPEC experimental campaigns

The backbone of the PRESPEC experimental set-ups will be equipment from EUROBALL and RISING. These items are listed below and will require operation costs as specified in Annexe C.

RISING equipment

Holding structures for detectors

- Cluster holding structure for fast beam campaign
- Cluster holding structure for stopped beam campaign
- Cluster holding structure for g-factor measurements
- Miniball holding structure (fast beam campaign)
- Hector holding structure (fast beam campaign)

Detectors

- CATE detectors (9 Si detectors, 9 short and 4 long CsI detectors)
- Active stopper (6 DSSSDs)
- FRS tracking detectors (2 MWs, 1 SC)

Electronics

- Digital electronics (DGF-E) for 15 Cluster detectors
- 3 CAMAC crates for digital electronics
- Mesytec electronics for 6 DSSSDs
- CAEN electronics for CATE
- 6 VME crates
- 3 RIO3 cpus
- 2 E7 cpus
- 4 VME trigger modules
- 8 V812 CAEN CFDs
- 4 V775 CAEN TDCs
- 15 NIM-TFA
- 6 V785 CAEN ADCs
- 1 complete UPS unit

Maintenance equipment

- S4 beamline (fast beam campaign)
- LN2 pipeline
- LN2 filling system
- 2 cooled racks
- 1 elevator
- Complete GSI pump unit
- Annealing oven with pump
- All spare parts and equipment for Cluster detectors
- 2 Ortec power supplies for Cluster detectors
- 1 HV CAEN crate with 2 cards

EUROBALL equipment

Detectors

- 17 Cluster detectors
- 105 HV elbows for Ge detectors
- full records of assembling, test and repair of Cluster detectors
- 1 manipulator (produced at Legnaro)
- all equipment needed for mounting and dismounting (except standard tools)

Electronics

- 1 HV CAEN crate with 10 cards, each card for 12 channels
- Cluster power supply

Details of the provision and employment of these EUROBALL items is subject of a formal letter of agreement between the PRESPEC collaboration and the EUROBALL Owners Committee.

Annexe B.2: HISPEC/DESPEC instrumentation

HISPEC/DESPEC detectors that may be employed in PRESPEC:

Item
Beam detectors and active target
AIDA-DSSD implantation array
DESPEC Ge-array
Neutron ToF array
4 pi neutron array
TAS
BaF2/LaBr3(Ce) fast-timing array
iso. Moments set-up
HYDE
LYCCA
Plunger

Details of the provision and employment of these items will be the subject of a formal letter of agreement between the PRESPEC collaboration and the owners of the respective items.

Annexe B.3: AGATA set-up

Details of the provision and employment of AGATA items will be the subject of a formal letter of agreement between the PRESPEC collaboration and the AGATA collaboration.

Annexe B.4: Installation of PRESPEC

Table B.5: *Time plan for PRESPEC experimental campaigns.*

2009				2010				2011				2012				2013				2014			
			In-beam (LYCCA-0)																				
								IN-beam (AGATA)															
														Decay (AIDA, neutrons, g-factors)									
			HISPEC/DESPEC instrumentation commissioning																				

Annexe C: PRESPEC Operation Costs

Annexe C.1: PRESPEC operation costs

Table C.1: *Estimate of the yearly operation costs for PRESPEC set-ups (in k€).*

Item	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Covered by GSI						
LN_2, power etc.	10	20	20	20	20	20
Computer maintenance	10	15	15	15	15	15
Detector laboratory (consumables etc.)	10	30	30	30	20	20
Total	**30**	**65**	**65**	**65**	**55**	**55**
Covered by PRESPEC collaboration						
Ge-det. repair/exchange	10	25	25	25	25	15
Part.-det. repair/exchange	10	20	20	20	20	10
Electronics repairs	10	20	20	20	20	20
Infrastructure items and shipping	10	10	40	10	40	10
Engineer travel	10	10	15	12	10	10
Contingency	7	17	17	17	17	17
Total	**57**	**102**	**137**	**104**	**132**	**82**

Annexe C.2: Sharing of PRESPEC operation costs

The running and maintenance costs and effort will be shared by the whole PRESPEC Collaboration based on potential usage as given in table C.2. The costs and percentage shares will be reviewed annually by the PSC.

Table C.2: *Sharing of running and maintenance costs (in k€, excluding personnel) between the collaborating institutions of the countries forming the PRESPEC Collaboration. These are estimated costs which will be reviewed annually along with the percentage shares by the PSC.*

Year/ Country	2009*	2010	2011	2012	2013	2014	Total	*Percentage*
Bulgaria			3				3	*0.5*
Finland								
Germany	37	30	30	30	30	30	187	*30.0*
Italy (INFN)	20	20	20	20	20	20	120	*19.4*
Israel								
Poland	-	5	5	5	5	5	25	*4.0*
Romania	3.5	3.5	3.5	3.5	3.5	3.5	21	*3.4*
Spain	17	11	11	11	11	11	72	*11.6*
Sweden	15	15	15	15	15	15	90	*14.5*
Turkey								
UK	17	17	17	17	17	17	102	*16.5*
Total	**112.5**	**104.5**	**107.5**	**104.5**	**104.5**	**104.5**	**620**	***100***

**The contributions for 2009 include funds for RISING until August 31 assuming transfer of remaining funds to PRESPEC.*

Annexe D: PRESPEC Management Structure

The organisation for the construction and the operation of the PRESPEC project comprises the following bodies:

- The PRESPEC Steering Committee (PSC), acting on behalf of the Parties, is responsible for the Project coordination and the science policy of the collaboration.

- The PRESPEC Project Manager (PM) supported by the Campaign Spokespersons and suitable experts on the pieces of ancillary equipment supplied by HISPEC/DESPEC and AGATA, is responsible for the execution of the Project along the lines defined by the PSC.

- The Campaign Spokespersons (CS) are responsible for the organisation of experimental campaigns within the PRESPEC project and for supporting the PM.

The terms of reference of each of these bodies is given in more detail below.

PRESPEC Steering Committee (PSC)

Membership:
Regular members are nominated by the Parties of the MoU. Contributing Parties of a country which represent more than 10% of the total equipment provided and capital invested as specified in annexe B1 and B4 respectively are entitled to have two members, all other contributing Parties of a country will have one member. The chairpersons of HISPEC and DESPEC will be members of the PSC ex-officio. The AGATA chairperson will attend when appropriate. The PRESPEC Project Manager will also normally attend the meetings of the PSC. The PSC may also invite others, such as the campaign spokespersons, to attend as appropriate for the purpose of consultation only.

Voting rights:
All members have equal voting rights.

Terms of reference:
The PSC is the decision-making body of the PRESPEC Collaboration and responsible for the allocation of resources supplied by the Parties, the collaborating institutions, and associated collaborations. The PSC will ensure that the primary criterion for deployment of any equipment is based on scientific merit. The PSC will also ensure adequate provision for the commissioning of HISPEC/DESPEC instrumentation.

The tasks of the Steering Committee are as follows:

1. define the scientific policy of the PRESPEC Collaboration,
2. elect a chair and vice-chair among its members who will each serve for a period of two years,
3. interact with resource providers,
4. affirm a Project Manager,
5. monitor the project based on reports received from the Project Manager,
6. decide on any modification of the Project proposed by the Project Manager,

7. interact with host labs, equipment owners and other collaborations to obtain letters of agreement,
8. decide on the experimental campaigns for PRESPEC and the timetable for the commissioning of HISPEC/DESPEC systems,
9. appoint the Campaign Spokesperson for each experimental campaign,
10. review the scientific progress of each experimental campaign based on reports received from the Campaign Spokesperson and prepare annual science meetings,
11. review the running cost statements and allocations.

Decisions in the PSC shall be taken by consensus.

The PSC shall not make any decision unless a quorum of two thirds of the voting members is represented.

Minutes of each meeting shall be drafted by the chairperson to the other members without delay. The minutes of each meeting shall be considered as accepted by the other members if, within thirty calendar days from receipt, the other members have not objected to the minutes in writing to the chairperson. After that date the minutes will be taken as a true record of the meeting.

The PSC chair acts as PRESPEC spokesperson and signs on behalf of the PSC all written agreements.

PRESPEC Project Manager (PM)

The PRESPEC Project Manager is responsible for the technical, infrastructure and safety affairs of the project. The PM is appointed by GSI as host laboratory and is affirmed by the PSC to coordinate the execution and implementation of the project.

PRESPEC Technical Board (PTB)

Membership of the PTB:

There is no standing PRESPEC Technical Board. Instead the PRESPEC Project Manager will convene an ad-hoc PTB involving experts on the relevant ancillary detectors, electronics and data acquisition drawn from the HISPEC/DESPEC Technical Board and the AGATA Management Board in order to ensure that each campaign is successfully carried out.

Terms of Reference:

The tasks of the ad-hoc PTB are as follows:

1. supervise the effective and efficient implementation of the campaigns,
2. collect information on the progress of the campaigns, examine that information to assess the compliance of the Project with the scientific and commissioning programme decided by the PSC and, if necessary, propose modifications of the programme to the PSC,

3. provide reports of the progress of the campaigns to the PSC including an annular planning and resource report,
4. advise the PSC on technical issues,
5. work together with the Campaign Manager to ensure the successful operation of PRESPEC.

PRESPEC Campaign Spokesperson (CS)

The PRESPEC Campaign Spokespersons are appointed by the PSC to organize experimental campaigns based on physics programmes demanding PRESPEC instrumentation.

The tasks of the CS are as follows:

1. organize physics workshops and the general information exchange to promote experimental campaigns with common instrumentation,
2. interact with the GSI Programme Advisory Committee and the GSI Beam Time Coordinator,
3. provide reports of the progress of a Campaign to the PSC,
4. advise the PSC on scientific issues,
5. work with the Project Manager to ensure that the campaign apparatus is properly set up and the campaigns are successfully carried out.