Memorandum of Understanding of the DEPFET Collaboration

Charles University Prague, Czech Republic
Physikalisches Institut der Universität Bonn, Bonn, Germany
Institut für Experimentelle Kernphysik (IEKP), Karlsruhe University, Karlsruhe, Germany
Max-Planck-Institut für Physik, München, Germany
II. Physikalisches Institut der Universität Göttingen, Göttingen, Germany
Institut für Technische Informatik der Universität Heidelberg, Heidelberg, Germany
II. Physikalisches Institut der Universität Gießen, Gießen, Germany
Henryk Niewodniczanski Institute of Nuclear Physics (PAN), Krakow, Poland
Centro Nacional de Microelectronica (CNM) Barcelona, Spain
University of Barcelona, Barcelona, Spain
University Ramon Llull, Barcelona, Spain
Instituto de Fisica de Cantabria (IFCA), University of Cantabria, Santander, Spain
University of Santiago de Compostela, Santiago de Compostela, Spain
Instituto de Fisica Corpuscular (IFIC), University of Valencia, Valencia, Spain

individually or collectively referred to as “members” in this memorandum

1. Preamble

The members of the DEPFET Collaboration work together in the design, construction and operation of a pixel vertex detector (PXD), based on the DEPFET technology for the Belle II detector at the SuperKEKB collider at KEK, Japan. The Belle II detector is an upgraded version of the Belle detector, the SuperKEKB electron-positron collider is an upgraded version of the current asymmetric B-Factory (KEKB), with a design luminosity in excess of 8×10^{35} per cm^2 s, which is scheduled to start operation in the year 2013. The physics program, as well as the general environment of such a machine, requires the vertex detector closest to the beam-pipe to be based on the new and technically challenging concept of the DEPFET principle.

In order to build the PXD for Belle II clear definitions of the work and the financial obligations among the members are required. The purpose of this memorandum of understanding is to define the main organizational, managerial and procedural guidelines for the collaborating members.
Since the SuperKEKB project, which is to be financed by the Japanese government, is nor yet fully approved, the concrete aspects of financial engagement of

the individual members is not yet fully defined and will be subject to a future Memorandum of Understanding, formulated within the Belle II Collaboration.

The DEPFET Collaboration has estimated the overall cost of the PXD and the German groups of the Collaboration, based on this estimate, have already been granted partial financial support by the German ministry of research (BMBF). Still, until the SuperKEKB project is endorsed by the Japanese government and the PXD is fully funded by the members (further applications to the respective funding agencies are necessary), a common fund should be installed for the DEPFET Collaboration to bridge any intermediate financial bottlenecks of the project.

This document describes the DEPFET Collaboration, the division of work amongst the members, the organizational structure as well as the rules related to building up and using the common fund.

2. Collaborating members, funding agencies and representatives

The following members are involved in the PXD project and constitute the DEPFET collaboration. Also given are the various funding agencies and the representative of each member group:

Country	Funding Agency	Member (Abbreviation)	Representative
Czech Republic		Charles University Prague (PRA)	Zdenek Dolezal
Germany	BMBF	University of Bonn (BON) University of Gießen (GIE) University of Göttingen (GOE) University of Heidelberg (HEI) University of Karlsruhe (KAR)	Norbert Wermes Sören Lange Ariane Frey Peter Fischer Thomas Müller
	MPI	MPI for Physics, München (MPI)	Christian Kiesling
Poland		Inst. of Nucl. Phys,, Krakow (KRA)	Henryk Palka
Spain	Ministerio de Educacion y Ciencia	CNM Barcelona (CNM) University of Barcelona (UBA) Univ. R. Llull, Barcelona (URL) IFCA Santander (IFC) Univ. of S. de Compostela (USC) IFIC Valencia (IFV)	Enric Cabruja Angel Dieguez Jordi Riera Babures Ivan Vila Alvarez Pablo Vazquez Regueiro Carlos Lacasta

3. Organizational Structure

The DEPFET Collaboration is organized as follows: Its main deciding body is the so-called “Institute Board” (IB), where each collaborating member is represented once. The list of the present representatives of the member groups is given in the previous section.

The IB elects a Project Leader (PL), who proposes a Technical Coordinator (TC), to be endorsed by the IB. In addition there is the appointment of an Integration Coordinator (IC), located in Japan, preferentially at KEK. The IC is found in mutual negotiations between the PL, Belle-II and KEK. Details of the organization and procedures are laid down in a separate document (bylaws).

4. Work Packages

The following list shows the work packages and responsibilities as agreed by the collaboration. KEK has agreed to contribute in consulting function. The details are worked out by the respective work package members.

Work Package	Lead Member	Collaborating Members
Detector Optimization	MPI	KRA, PRA
Sensor Development	MPI	
ASIC Development		
Switcher	HEI	
Current Digitizer (DCD)		
Data Handling Processor (DHP)	BON	UBA
Interconnection technology		MPI, USC, URL
Module Design		
Sensor Ladder	MPI	HEI, BON, IFV, CNM
Kapton Flex	GOE	BON, URL
Data Handling Hybrid (DHH)	GOE	BON, URL
Mechanical Design	MPI	KAR, KRA, IFV
Thermal Issues	KAR	MPI, KRA, IFV
Setups for thermal tests	KAR	MPI, IFV, USC, IFC
Mechanical mockup	KAR	MPI, IFV
Data Acqusition	GIE	KRA, GOE, MPI, KEK, URL
Power supplies with slow control	KRA	KEK, USC
Cooling plant	KEK	
Test Facilities	PRA	KAR, BON, IFV, IFC
Test beams		URL,CNM, USC
Integration and commissioning		all
Operation		all

5. Common Fund

Although the final approval of the SuperKEKB machine has not yet been spelled out, the DEPFET Collaboration has been urged by the Belle-II management to proceed with the planning and construction of the PXD in a way to meet the SuperKEKB schedule of first beams in 2013. In view of possible uncertainties in the spending profile and in view of the still incomplete funding of the PXD, a Common Fund (CF) will be established, which at the moment should serve to bridge financial bottlenecks of members with limited financial support (see preamble).

As long as the funding of the PXD is not finalized (mainly due to the missing SuperKEKB approval) the CF will be filled on a voluntary basis by the members. In a later stage the rules for the individual annual contributions will be fixed.

The Common Fund (CF) will be hosted at the MPI for Physics in Munich, on a special account. According to the wish of the IB, the CF is being managed by the PL. He is responsible to keep track of the contributions transferred to the CF. He will also make proposals to the IB how to use parts or all of the CF, the proposals being subject to approval by the IB.

The PL is responsible to keep track of the transferred contributions to the CF and of all the expenses withdrawn from the CF. The PL also makes sure that the members paying into the CF are properly compensated, if so desired, once the overall funding of the PXD is established. The compensation proceeds at the latest when the final grants for the project have been distributed to the members by the various funding agencies.

6. Signatures

This section contains the signatures of the representatives (typically the institute’s directors)