# ADDENDUM

to

# THE MEMORANDUM OF UNDERSTANDING FOR A MULTI-LATERAL COLLABORATION

between

# THE INSTITUTIONS AND FUNDING AGENCIES OF THE CTF3 COLLABORATION

concerning

# THE CONTRIBUTION OF

# THE UNIVERSITY OF KARLSRUHE, LABORATORY FOR APPLICATIONS OF SYNCHROTRON RADIATION

# TO THE CTF3 COLLABORATION

February 2009

**CONSIDERING:**

The Memorandum of Understanding ("the MoU") defining the framework applicable to the construction of a 3'rd generation Compact Linear Collider Test Facility (CTF3) and the performance of Experiments to demonstrate the feasibility of key issues of the CLIC scheme;

That Article 1.2 of the MoU envisages Addenda defining each contribution pledged to the CTF3 Collaboration,

**THE UNIVERSITY OF KARLSRUHE, LABORATORY FOR APPLICATIONS OF SYNCHROTRON RADIATION**, in its capacity as Member of the CTF3 Collaboration, **HEREWITH AGREES** to make the following contributions:

***The LAS shall assume responsibility for the provision of the following contributions for the period 2009-2011 to CTF3:***

The LAS contributions concern the development and test of mock-ups for CLIC damping wigglers. The mock-up should demonstrate that a full size damping wiggler can be built with a $Nb_3Sn$ wire. If this is the case the ultimate goal is to apply for full funding from the 2nd call for the EUCARD program. The scientific program of the EUCARD application foresees in sub-task 4 the installation of the cryostat with full size wiggler in the ANKA storage ring and in sub- task 5 that the wiggler performance is tested with beam at ANKA.

The particular contributions of LAS to this development are:

- 0.2 FTEs over two years of specialists in superconductive insertion device design and FE field calculation supervising a PhD work in collaboration with CERN TE/MSC:

  A physicist will be paid for two years by the University of Karlsruhe to work part time (20%) on the initial training and continous supervision of a PhD student working on the design of a magnetic mock-up for the damping wiggler. In these two years he will stay for initially 2 months at CERN. During his stay at CERN he will be get from CERN an additional subsistence of 4000.- CHF (in case he is married 5000.- CHF) per month, in accordance with CERN project associate rules. Later on he will spend 0.2 FTE for support and supervision at CERN or Karlsruhe according to the project requirements. Travel expenses for these stays will be covered by CERN in accordance with CERN rules.

  A position for the PhD student will be initiated by CERN and LAS within the framework the Wolfgang-Gentner doctoral student program.

  The contribution encompasses the following items:

  - Magnetic design for $Nb_3Sn$ prototype wigglers for the CLIC damping ring, including

    * Definition of the magnetic parameters based on the beam optics requirements
    * Analytic magnet design defining the physical parameters of the wiggler
    * Magnetic field calculations with FE programs
    * Study to optimise integrated field quality, end-field and fringe-field effects
    * Magnet design report and/or engineering specification
  - Contributions to the magnetic measurement specification
  - LAS will organise the measurements of the wiggler mock-up field maps
- 1/2 man-year for halo simulations for the CLIC drive beam (in collaboration with CERN AB/ABP)

The total financial equivalent of these contributions will be approximately 135kCHF.

This Addendum shall form an integral part of the MoU.

(K. Plönert)
University of Karlsruhe