ADDENDUM

to

THE MEMORANDUM OF UNDERSTANDING FOR A MULTILATERAL COLLABORATION

between

THE INSTITUTIONS AND FUNDING AGENCIES OF THE CTF3 COLLABORATION

concerning

THE CONTRIBUTION OF THE NATIONAL TECHNICAL UNIVERSITY OF ATHENS THE UNIVERSITY OF PATRAS THE DEMOCRITUS UNIVERSITY OF THRACE TO THE CTF3 COLLABORATION

CONSIDERING:

The Memorandum of Understanding ("the MoU") defining the framework applicable to the construction of a 3rd 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 the conclusion of Addenda defining each contribution pledged to the CTF3 Collaboration,

THE NATIONAL TECHNICAL UNIVERITY OF ATHENS ("NTU-Athens"),

THE UNIVERSITY OF PATRAS ("UoPatras"),

THE DEMOCRITUS UNIVERSITY OF THRACE ("UoThrace"),

in their capacity as Members of the CTF3 Collaboration and represented by Professor Evangelos Gazis,

HEREWITH AGREE to make the following contributions:

1. Beam Instrumentation (NTU-Athens, Applied Physics Department: Professor Georgios Tsipolitis)

Beam instrumentation studies, MC simulation for instrumentation, beam protection monitoring and proposal for micromegas detector prototype construction in co-operation with LAPP-Annecy.

In addition, the Greek participation shall contribute to the LAPP beam instrumentation project for beam loss and beam position monitor for the CTF3 and sequent projects. (**Thibaut Lefevre**[1] and Lars Soby BE/BI).

DELIVERABLES: A micromegas prototype for beam monitoring and test measurements
TIME SCHEDULE: Two years
RESOURCES: Two senior physicists, two students

[1] CERN colleagues printed in bold shall acts as the link persons between the CTF3 Collaboration and the Greek contributors concerned.

2. Mechanical Studies & Construction (UoPatras, Mechanical Engineering Department: Professor Georgios Papanikolaou, Professor Vassilios Kostopoulos)

The mechanical part of the Greek contribution shall be divided into the test structures studies and the prototype construction of high precision mechanical parts (**Germana Riddone** BE/RF, Mauro Taborelli and Cedric Garion TE/VSC, Said Atieh EN/MME).

In addition, the Greek participation shall contribute to the simulation studies of the material properties, i.e. fatigued materials and test structures for pulsed surface heating (Gonzalo Arnau Izquierdo EN/MME). Possible contribution to the PADS construction shall be investigated among the Greek firms under the supervision of the UoPatras.

In addition, the possibility of the studies for the high and low-power microwave, material vacuum issues, absorbing materials, like ferrites or ceramics working under vacuum, shall be investigated (Igor Syratchev and Alexej Grudiev BE/RF).

DELIVERABLES: Theoretical simulations and test measurements for material properties
TIME SCHEDULE: Two years
RESOURCES: Two senior engineers, two students

3. Digital Electronics (UoPatras, Physics Department: Professor Vassilios Anastassopoulos, Democritus UoThrace, Electrical & Computer Engineering Department: Professor Ioannis Andreadis)

Design, prototype construction and test of digital electronics for the CLIC beam instrumentation detectors or other parts of the CTF3 project shall be studied, probably in co-operation with LAPP (**Steffen Doebert** BE/RF and Frank Tecker BE/OP).

DELIVERABLES: Feasibility studies for electronics construction and test measurements
TIME SCHEDULE: Two years
RESOURCES: One senior physicist one senior engineer, two students

4. Control Systems (NTU-Athens, Applied Physics Department: Professor Theodoros Alexopoulos, UoThrace, Electrical & Computer Engineering Department: Professor Ioannis Andreadis)

A global study for the high gradient controls shall be initiated for the control of the magnets (current) and the High and Low Power supplies (voltage, current) plus the monitoring of different sensors (gas, temperature, B-field) under the frame of the SCADA system PVSS-II, providing alarms and interlock conditions for the magnets operation, beam losses and beam protection monitoring (**Hermann Schmickler**, Roberto Corsini, Mick Draper).

In addition, a database of the monitoring parameters shall be designed for the archiving and off-line analysis of the data. (Alexey Dubrovskiy and Frank Tecker BE/OP).

DELIVERABLES: Implementation for monitoring and control parts via the PVSS-II of the CTF3 machine and test measurements
TIME SCHEDULE: Two years
RESOURCES: One senior physicist one senior engineer, two students

5. The CLIC Machine-Detector Interface (NTU Athens, Applied Physics Department: Professor Evangelos Gazis)

This work package involves various issues at the interface between the machine and experiment, under the overall co-ordination of Emmanuel Tsesmelis. The Greek contribution shall consist of the design, construction of the experimental area on the frame of the mechanical and civil engineering work for services, etc., the estimation of the machine-induced background at the particle detectors, and the specification of the radiation shielding. (**Emmanuel Tsesmelis**, Daniel Schulte).

DELIVERABLES: Mechanical and civil engineering studies for the machine-detector interface
TIME SCHEDULE: Two years
RESOURCES: Two senior physicists, one senior engineer, two students

For the National Technical University of Athens,

the University of Patras,

the Democritus University of Thrace,

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Professor Evangelos GAZIS

Signed on ....23 April.....2009

In the presence of:

For the European Organization for Nuclear Research (CERN)

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Professor Rolf-Heuer
Director-General

Signed on ....23 April.....2009