

PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANT LASTING 18 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT OF ENGINEERING AND APPLIED SCIENCES OF THE UNIVERSITY OF BERGAMO (ACADEMIC RECRUITMENT FIELD 09/E3 – ELECTRONIC - ACADEMIC DISCIPLINE – ING-INF/01 – ELECTRONIC (FUND: REVADAM17)

announced with decree of the Rector Rep. no. 510/2017 of 25.09.2017 and posted on the official registry of the University on 25.09.2017

RESEARCH PROJECT

The contract deals with the development of beam diagnostic instrumentation to be installed on the LIGHT machine, a proton LINAC for medical applications. In particular the work should focus on the non-destructive measurement of beam energy, a fundamental parameter to be measured accurately for the proper machine operation and for patient treatment. The activities can be split in different phases, summarized hereafter:

Phase 1: Assembly of the present ToF system in laboratory and complete characterization.

Phase 2: Study on the acquisition system and comparison of the different analysis methods (phase detector + ADC or direct acquisition and digital processing with FPGA). The standard to be used for control hardware and software is NI PXI and Labview.

Phase 3: Installation and commissioning of the ToF system on the LIGHT accelerator.

Phase 4: Comparison between the ToF and other beam energy methods.

At the end of each phase a deliverable is foreseen, as specified in the following list:

Deliverable Phase 1 (Not later than 6 months after contract signature): Technical report on the present system characterization in laboratory.

Deliverable Phase 2 (Not later than 12 months after contract signature): Technical report and Labview source code developed for the data processing with the two methods.

Deliverable Phase 3 (Not later than 18 months after contract signature): Technical report on the commissioning results.

Deliverable Phase 4 (Not later than 36 months after contract signature): Technical report on the final system performances on beam and comparison with other methods.