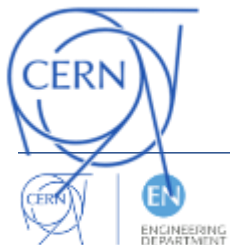


PACMAN : technical objectives

Hélène Mainaud Durand



Subject 1.1



Non-contact high precision sensor for Leitz Infinity Coordinate Measuring Machine

Characterization of the stretched wire

Requirements

Feb. 15

Requirements

March 15

Characterization

Nov. 15

Compatibility of the measurement head with magnetic fields

Method & means to measure the stretched wire

Impact shown

ok

Requirements

Characterization on accuracy

July 16

Study of sensors

Oct. 15

Qualification

Nov. 15

Integration, acquisition, calibration, software, etc.

Feb. 16

Qualification on the Leitz CMM at CERN.

June 16

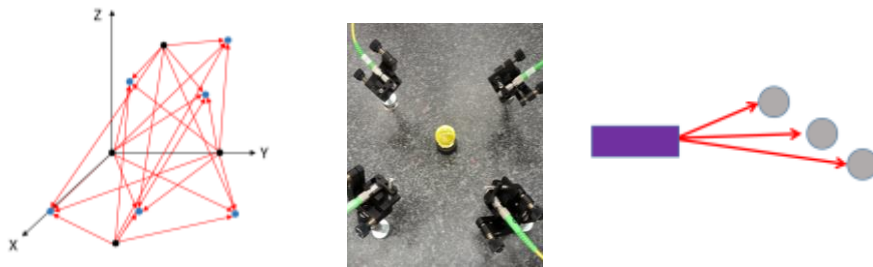
Measurements on the PACMAN validation bench

July 16

Subject 1.2

Development and validation of an absolute Frequency Scanning Interferometry FSI network

Upgrade of the system



Inter-comparison with
 μ -triangulation

Measurements on the PACMAN validation bench

Extrapolation to a portable solution

Preparation of the network
for PACMAN

How to detect the wire?

Network configurations

Design of network

Qualification

Subject 1.3

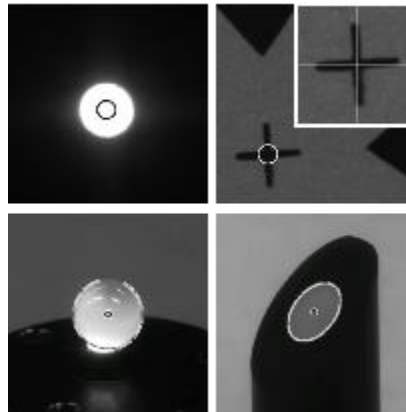
Micro-triangulation for high accuracy short range measurements of dynamic objects

Upgrade of the system

Control several instruments Apr 15

Enhance Auto-Focus Mai 15

Automatize exposure time Jun 15



Adaptation to the PACMAN project

Test new FSI targets Jul 15

Detect the stretched wire Sept 15

Simulate configuration Nov 15

Inter-comparison with FSI

Jan 16

Measurements on the PACMAN bench

Aug 16

Extrapolation to a portable solution

Dec 16

Improve GUI

Improve connectivity

Test Leica TS50

Subject 2.1

Stretched wire systems for the magnetic measurements of small aperture magnets

Improvement/refinement of
the wire based methods

Comparison between classic &
oscillating stretched wire methods

Analysis of uncertainties

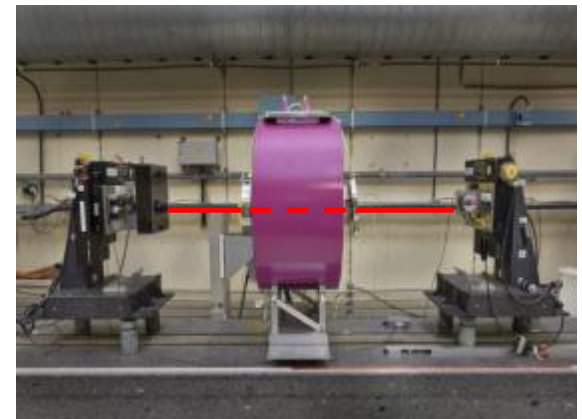
Influence of background fields

Inter-comparison with
PCB rotating coil bench

Measurements on the PACMAN validation bench

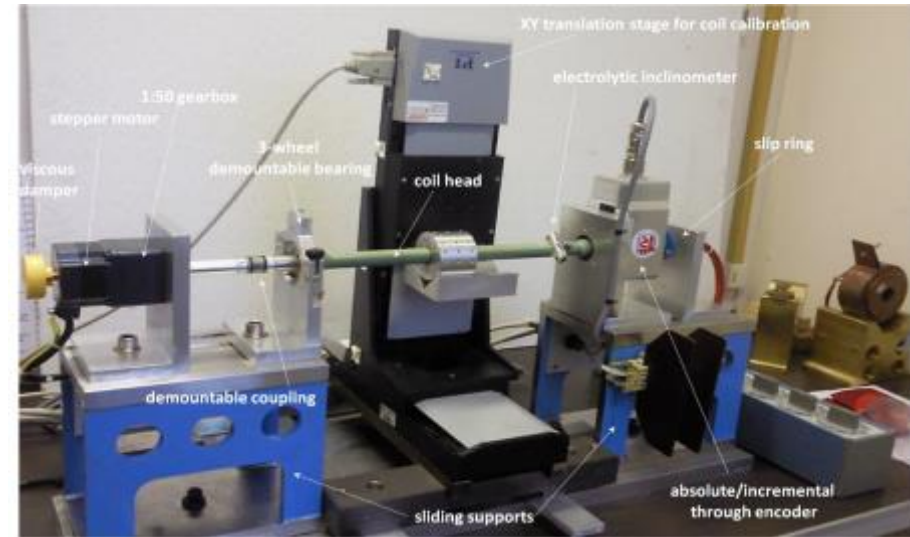
Adaptation to the
PACMAN project

Determination of the
position of the wire
Design of a bench
for PACMAN



Subject 2.2

PCB technology for small diameter field probes



Status of current bench
Study of sensing coils

Hardware & software
improvements for a mini
PCB rotating coil bench

Determination of metrological
improvements

Development of a
PCB rotating coil

Inter-comparison with the stretched wire method

Subject 3.1

Ultra precise quadrupoles magnet assembly and testing. Integration of an alignment test-bed towards an industrial production

Assembly of ultra precise quadrupoles

Integration of an alignment test-bed

State of the art
Uncertainties estimation
Development of a new Methodology, study of prototypes, final validation

Interfaces study

Integration of the technical systems

Design of the PACMAN validation bench

Assembly & qualification

Extrapolation to an industrial production

Subject 3.2



Seismic sensor development & vibration characterization

Definition of the requirements

Investigation of different technologies

State of the art

Definition of procedure of tests & qualification

Comparison with sensors developed at LAPP

CLIC BDS requirements

CLIC linac requirements

PACMAN requirements

Choice of a sensor for PACMAN

Improve/build prototype to answer CLIC BDS requirements

Subject 3.3

Nano-positioning of the main linac quadrupole as means of laboratory pre-alignment

State of the art

Development of a long range actuator

Requirements definition Feb. 15

Study & design of solutions Dec. 15

Performance characterization June 16

Extrapolation to 4/5 DOF Oct. 16

PACMAN nano-positioning system

Implementation & qualification of solutions developed for type 1 Sept. 16

Adaptation to the type 1 setup of the PACMAN bench Dec. 16

Measurements on the PACMAN validation bench

Subject 4.1



Alignment & resolution of a BPM operating at microwave frequencies in the nanometre regime

Determination of a zero of BPM using a stretched wire

State of the art

Evaluation of 2 methods

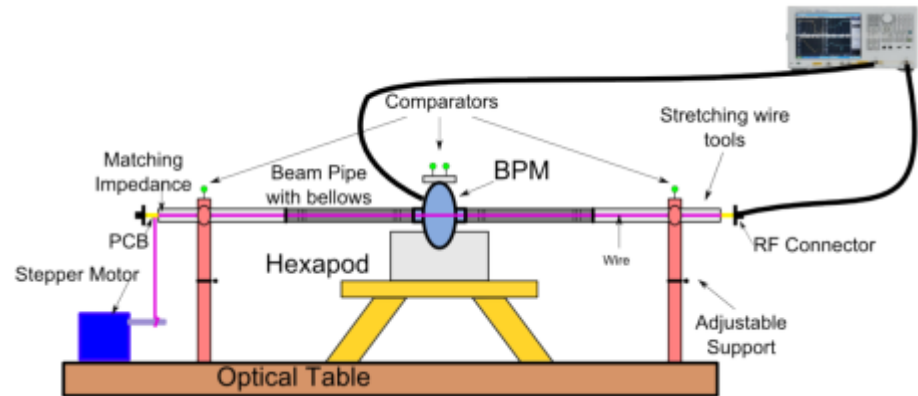
Qualification on a bench

Towards a nanometric resolution



Integration in PACMAN setup

Measurements on the PACMAN validation bench

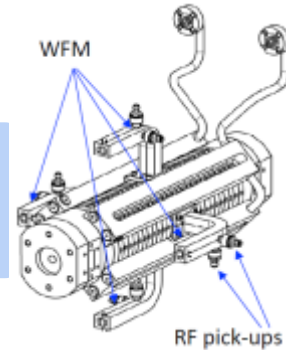


Subject 4.2

EM field alignment of the CLIC accelerating structure with help of WFM signals

Measurement of the internal geometry of AS using wakefields

Data acquisition of structures installed in CTF3

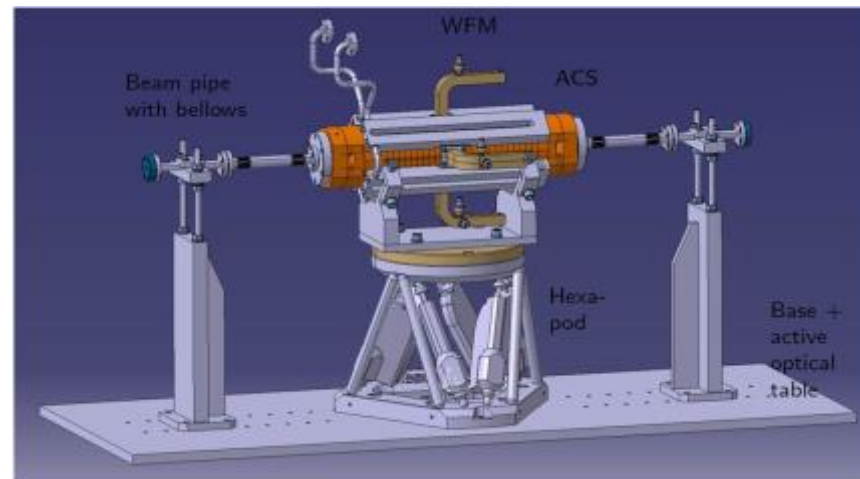


State of the art

Evaluation of 2 methods

Qualification on a bench

Evaluation of solutions for the cell to cell alignment



Project schedule

PACMAN validation bench

