

PREPARATION ACTIVITY FOR THE SIDDHARTA-2 RUN AT DAΦNE

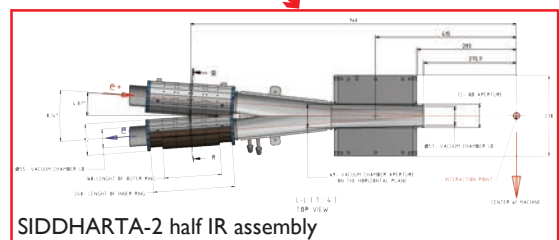
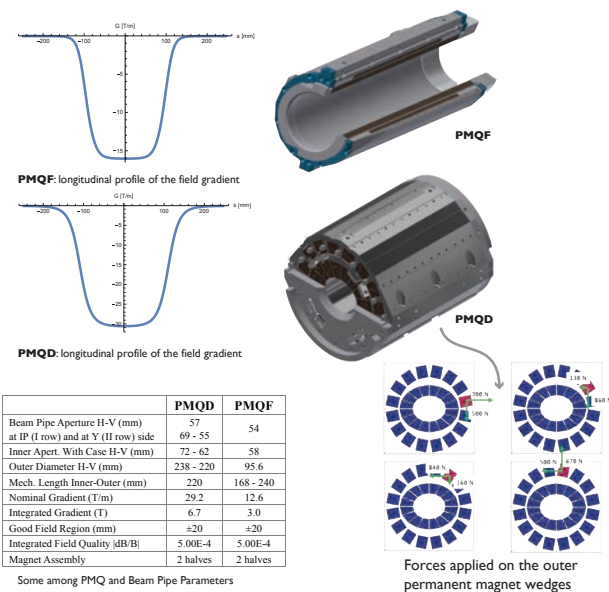
C. Milardi†, D. Alesini, S. Bini, O. R. Blanco-García, B. Buonomo, S. Cantarella, S. Caschera, A. De Santis, G. Delle Monache, C. Di Giulio, G. Di Pirro, A. Drago, A. D'Uffizi, L. G. Foggetta, A. Gallo, R. Gargana, A. Ghigo, S. Guiducci, S. Incremona, F. Iungo, C. Ligi, M. Maestri, A. Michelotti, L. Pellegrino, R. Ricci, U. Rotundo, L. Sabbatini, C. Sanelli, G. Sensolini, A. Stecchi, A. Stella, A. Vannozzi, M. Zobov, LNF-INFN, [00044] Frascati, Italy
G. Castorina, Roma I - INFN, [00185] Roma, Italy
J. Chavanne, G. Le Bec, P. Raimondi, ESRF, [38000] Grenoble, France

Abstract

DAΦNE, the Frascati lepton collider working at the c.m. energy of the Φ resonance, continues to be a prominent infrastructure to realise experiments aimed at studying elementary particles and nuclear physics. The motivations of this long lasting interest are related to the DAΦNE ability to increase its performances in terms of luminosity thanks to the innovative Crab-Waist collision scheme.

In this framework, a new run for the SIDDHARTA-2 experiment has been planned in the year 2019. The detector presently installed in the interaction region, KLOE-2 (**TUYGBD2_talk**), will be removed and a new low- β section, equipped with new permanent magnets quadrupoles, will be installed. Diagnostics tools and feedback systems will be improved as well.

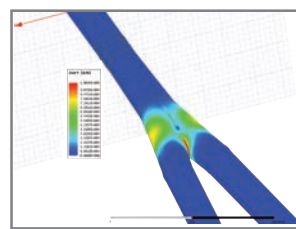
PERMANENT MAGNET QUADS



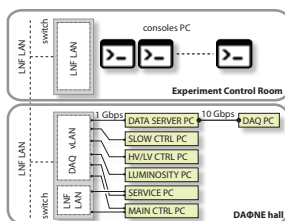
Half IR beam pipe

The AI vacuum chamber of the low- β section have been designed in order to fit with the new quadrupole apertures, paying great attention to the impedance budget of the new structure.

In a collider composed of two separate rings having a common IR, it is unavoidable to create electromagnetic higher order modes (HOM) in the area where the vacuum beam pipes of the two rings merge in the common beam pipe (Y-shape chamber).



MACHINE-EXPERIMENT DATA EXCHANGE



Providing machine and experimental people with data reporting machine operating conditions and experiment meaningful parameters helps both staffs to run in the most effective way. In the DAΦNE-SIDDHARTA collaboration, the network has been kept as simple as possible: a dedicated vLAN has been setup for the experiment computers (both for acquisition and slow control). Such vLAN is then routed on the laboratories LAN which the users' consoles are connected to.

Fresh data are then continuously written to files shared over NFS and streamed in JSON packets as well.

WHAT IS ON THE GO

- More than 500 DAΦNE PSs will be serviced;
- The PSs of the HV steering magnets in the e- and e+ rings will be replaced with devices having 10 times higher accuracy and resolution;
- The capacitor bank of pulsed magnet PSs in the Transfer Lines will be replaced;
- The longitudinal FBKs in the e- and e+ rings will be upgraded by adopting the back-end and the timing control based on QPSK in order to stabilize longitudinal and transverse motion at the same time;
- A new luminometer will be installed in the IR in order to grant absolute and instantaneous luminosity measurement independently from the experiment (**MOPMF089**);
- Injection efficiency will profit from faster commutation procedure and from the improved Transfer Lines integrated diagnostics and simulation tools (**THPAK020**).

An extensive program has been defined, and is under way, to prepare the run for the SIDDHARTA-2 experiment at DAΦNE. Several aspects of the collider and many subsystems have been upgraded in order to grant the highest performances in terms of luminosity and the lowest background contamination on the acquired data.

The run for SIDDHARTA-2 will be the very last physics run of DAΦNE as a collider; thereafter the accelerator complex will most likely be converted in a test facility.