Frascati National Laboratory

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1 Introduction

This document reports a detailed summary of the activities that went on at the Frascati National Laboratory (LNF) of INFN during 2018.

The LNF is the largest (for number of employees) and the oldest of the INFN laboratories. It has two principal characteristics: the capability of building and operating particle accelerators and that of designing and constructing particle detectors.

The LNF site covers a surface of 131.178 m^2, 56.000 of which are indoor and include offices, laboratories and workshops.

At LNF are hosted the following facilities:

- DAΦNE, an e^+e^- collider operating at the Φ energy (1020 MeV), able to deliver instantaneous luminosities $\sim 2 \times 10^{32} cm^{-2} s^{-1}$, a world record at this energy;
- a synchrotron radiation facility (DAFNE_Light) with lines in the X, UV and infrared regions, extracted in parasitic or dedicated mode, from the intense photon emission of DAΦNE;

- a Beam Test Facility (BTF), with two beam lines providing electron/positron or photon beams mainly for detector calibration purposes;
- SPARC_LAB, a facility that combines a linear accelerator (SPARC) and a $\sim$ 200 TW laser (FLAME). This is an infrastructure for R&D in the field of new technologies for particle acceleration like FEL, PWA and TeraHertz radiation;
- SCF_LAB, a laboratory equipped for Space Simulation. It characterizes devices that are to be sent in spatial missions;
- DDG-Lab, the infrastructure of the Detector Development Group, that since 1985 has been performing R&D, design and construction of classical and innovative gaseous detectors for large high energy physics experiments;
- LAMPS (Laboratory Magnetic high Pressure and Spectroscopy), the site where research is conducted on superconductors, magnetic materials and related systems using magnetic and electric transport tools with cryogenic equipments able to study the dynamic behaviour of these materials under conditions of extreme temperature and magnetic field;
- NEXT (Nanoscience EXperiments for Technologies), a laboratory that synthesises and studies nanostructured carbon materials;
- assembling halls, mechanical workshops, a Computer Center, and an Electronics Laboratory suited for complex and challenging enterprises in many fields of fundamental research;
- eight clean rooms (class ISO 6$\div$8), three connected to DAFNE_Light, SPARC_LAB and SCF_LAB, and the others equipped for the construction of different kind of particle detectors, for a total area of $\sim$400m^2.

2 Organization

The LNF personnel, at the end of 2018, consisted of 317 units of personal, 29 of which have a fixed term contract, plus 157 associate members. Among these, there are university and PhD students, young post-Docs and employees from universities or other research institutions. Associate members work alongside staff members and likewise take part in the laboratory's activities. Tab. 1 shows the distribution of the LNF personnel among the different profiles.

	Staff	Temp.	Tot.
Researcher	70	4	74
Engineer	50	13	63
Administrative	34	3	37
Technician	134	9	143
Tot.	288	29	317

Table 1: Snapshot of the LNF personnel at Dec. 2018.

Fig. 1 shows the organization chart of the laboratory. The structure consists of services that respond directly to the Director, and three divisions (Research division, Accelerator division and Technical division) that also consist of different services. The laboratory also has a Scientific Committee composed by eminent international scientists that help the Director in shaping the

research program. They meet twice a year and deliver recommendations regarding the scientific activities of the laboratory.

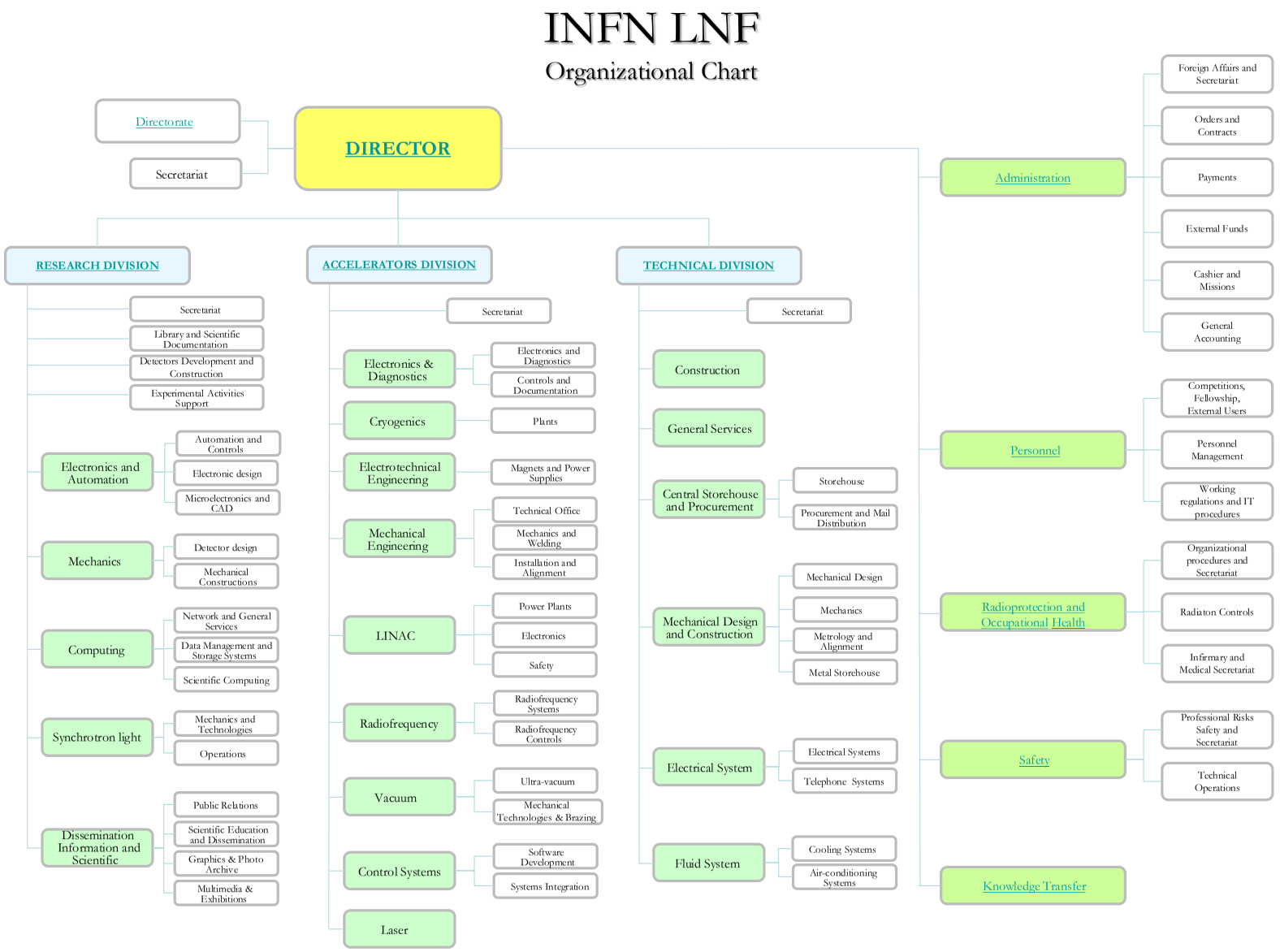

Figure 1: The LNF organization (see text for more details).