

## 6 Personnel balance: inclusiveness, well-being and diversity inside INFN through a gender perspective

This section starts from sentences written in INFN CVI Report 2014:

*“INFN is performing at a very high level of scientific and technological excellence, and compares very well with similar Institutions worldwide. ... a mission for INFN that is broader and more societally relevant than in the past”.*

A scientific analysis and valuation of research/academic institutions cannot forget that they are highly complex social systems in which people work and spend a lot of time, say more than 60% of their life. The integration of human resource management strategies and systems to achieve the overall mission, strategies, and success of the institution while meeting the needs of employees and other stakeholders is also important and requires plans as well.

In this context, a gender perspective that encourages diversity and inclusiveness can be the starting point to overcome the employee requirements in order to improve the INFN organizational wellbeing. It is clear that the inclusion of gender dimension in research is crucial for INFN in order to maintain a position among leading research organizations in Europe, taking also into account that the Third Mission and the Horizon2020 “long term perspective” require a “diversity of views and approaches”. This inclusion must be able to overcome gender biases, which could be defined as systematic error in the gender approach to the research process. The EU recommendations require a conscious transformation of organizational processes without which the outcomes will be unchanged: this is true for women career as well as for the implementation of Charter & Code principles.

*Change in workplace norms is unsettling particularly when it involves a shift in the way ‘things have always been done’. In the complex system of research, complex, adaptive and flexible ways of thinking are required in order to create changes, new programs that can alter behaviour and attitudes effectively.*

The V Affirmative Action Plan (PTAP), proposed by INFN *Central Guarantee Committee* (CUG), aims to exploit people and the reality in which they work, starting from the critical issues related to equal opportunities between men and women. More information can be found at: <https://web2.infn.it/CUG/index.php/it/piani-triennali-di-azioni-positiv>

The V PTAP underlines that in order to integrate human resource management strategies and systems the main requirements are:

- increasing the transparency in decision-making process and to increase the information circulation;
- removing unconscious bias from institutional practices;
- promoting excellence through diversity;
- improving research by integrating a gender perspective;
- modernising human resources management and the working environment

In the following we report the work done in 2015 in this direction inside the Institute and in European context in which INFN is involved. The new CUG will follow the implementation of V PTAP.

*Work done and to be done*

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**Transparency** is, or should be, a principle that any kind of organization and project is asked to comply with. One of the main problems faced by research institutions is opaqueness in decision-making: despite significant progress, lack of transparency continues to affect structures and processes, with the associated phenomenon of “old boys” networks and patronage. Evidence suggest that women



and men would both benefit from a system where there is clarity of what is required from researchers, information is freely available, and clear criteria are used in decision making.

Furthermore a participatory research typically seeks to balance interests, benefits, and responsibilities between the users/subjects and the research institutions involved. It seeks to make the entire process, from planning to reporting, transparent and accessible to all parties.

**Appointment of the new CUG board.** -- In the direction of transparency CUG proposed a new procedure, “open consultancy procedure”, to acquire personnel availability for the appointment of the new CUG board. For the first time such a procedure has been adopted by INFN on March 2015. <https://web2.infn.it/CUG/index.php/it/>

**Recruitment procedure of researchers** -- With respect to transparency, CUG draws the attention of INFN management to the need of concretely adopt the EU “Minerva” code for each recruitment procedure of researchers<sup>2</sup>. CUG asked, for each recruitment procedure, to collect in a database the curricula of the selection committee and of the applicants. It was also asked to publish within an internal web page the scientific curricula of the INFN employees. Curricula of the selection committee are now available on the web.

#### *Enhancement of human resource in the working environment*

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**Codes of Conduct.** – Respect for the dignity of people and individual freedoms, opposition to all forms of discrimination and physical and psychological violence and professional integrity are recognised by INFN as essential values for the improvement of the organization. In this optics, INFN identifies the rules of conduct necessary for the respect of principles of legality, transparency and good administration, as required by current legislation putting them in three different codes. In 2015 a complete code was adopted, requiring all personnel, whether employees or associates, to fully comply with the code:

[http://www.infn.it/index.php?option=com\\_content&view=article&id=690&Itemid=552&lang=en](http://www.infn.it/index.php?option=com_content&view=article&id=690&Itemid=552&lang=en)

**Circles of well-being.** -- Greater diversity and equality of opportunity are crucial points in a process of enhancement of human resources in a sustainable and “people” centred working environment. The analysis performed by the Ombudsperson -“Consigliera di Fiducia”- in collaboration with CUG - on the “Organizational wellbeing” perceived by the INFN employees has shown two main critical factors: “organizational equity” and “people capacity enhancement”. As mentioned in the last year report, on the basis of those results a training program for “circles of well-being” was proposed. It has been decided to start it only in four INFN structures of different size and characteristics, instead of all, in order to understand the feasibility and the integration in the INFN specific working organization. The training program will begin on September 2015.

#### *Modernization of human resources management and the working environment*

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**Teleworking.** -- The reconciliation of work and family life include putting in place strategies for flexible work schedules. INFN has started in 2015 its first teleworking program with an ad hoc

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<sup>2</sup> Minerva code as approved by the EC-led Helsinki Group on Women and Science to give full effect to the European Charter for Researchers and the Code of Conduct for their recruitment (2005).

regulation. Telework allows employees work at home or at a local telework center one or more days per week using communication tools, such as such as phone, fax, modem, Internet teleconferencing or e-mail, to perform work duties from a remote location. Telework can be used in several cases for personal and/or family motivations. The present INFN regulation will be revised in two years in order to understand the real employee needs.

<http://www.lnf.infn.it/rta/Disciplinare%20Telelavoro%20INFN.pdf>

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*Increase the participation of underrepresented groups in the research: towards a mentoring programme*

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**Mentoring** -- One of the action promoted in the last INFN affirmative action plans (PTAP) is a mentoring programme to support the women career inside the Institution crossing competences of mentors and mentees. The basic idea is always to ameliorate the research quality and working environment through the integration of a gender perspective. The research and academic environments suffer from lack of female role-models, limited networking activities for women and limited opportunities to focus on own career development goals.

Mentoring is a *goal-oriented relationship* that aims to enhance and nurture career development and reflection on the part of the mentee through guidance and support from a more experienced mentor. It is a mutually beneficial learning exchange of perspectives and the informal knowledge gained through experience. Differently from coaching it is a long term process involving critical support towards longer term goals and the development of long-term skills.

In order to test and to better understand the complete process, some components of INFN CUG are strictly collaborating with European Project GENOVATE of University Federico II of Naples on a mentoring program born (the CUG president is also component of Genovate Advisory Board). For the moment only women are involved as mentors and mentees. Training courses, seminars, workshops have been realized in collaboration between INFN CUG and GENOVATE team.

<http://www.genovate.unina.it/index.php/genoblog/94-scheda-mentoring.html>

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*6.1 Inside Science Europe*

Science Europe is an association of European Research Funding Organisations (RFO) and Research Performing Organisations (RPO), based in Brussels. Science Europe supports its [Member Organisations](#) (MOs) in their efforts to foster European research. It will strengthen the [European Research Area \(ERA\)](#) through its direct engagement with key partners. In doing so it will be informed by direct representation of all scientific communities in its reflections on policies, priorities and strategies.

On August 2014, the Gender and Diversity Working Group (WG) has been set up bringing together experts from Science Europe MOs to reflect on and discuss challenges related to gender and diversity issues in science and academia. The WG operates by exchanging experience, material and practice, with the aim of providing a deeper understanding of existing policies in the various MOs of Science Europe. The Gender and Diversity WG will recommend actions and indicators related to gender and diversity dimensions to Science Europe. INFN entered the group with a component of the CUG.

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*6.2 European Gender Project: GENERA*

The project “GENERA – Gender Equality Network in the European Research Area” has been proposed to GERI.4.2014 “Support to research organizations to implement gender equality plans” in



the Horizon 2020 Science with and in Society work program. The project, born inside the European network APPEC (AstroParticle Physics European Consortium), aims to develop a common framework to promote gender equality in European research organizations operating in the field of physics. The project's official start date is 1<sup>st</sup> September 2015 and it will continue for three years.

The choice for physics as the first field for coordination of the implementation of Gender Equality Plans (GEP) is justified for several reasons, among which two are overarching: physics research is highly international and therefore requires extremely high mobility of the researchers and – unfortunately and maybe related - physics has still a highly unbalanced gender representation. This requires a coordinated European approach to make physics research more inclusive for women and by that make the field contribute even better to the challenges of responsible research and innovation in the European Research Area.

GENERA will conduct an assessment of gender activities and their impact in all partner organisations of the project involving all actors of the research field. The survey of the physics institutions is seen as a consolidation of knowledge. By finding gaps in current gender activities or revealing organisational practices which have a negative effect on female researchers careers' the assessment will ensure that obstacles to the career progress will be brought to light and can be addressed during the project. The results will provide the basis for tailoring the existing GEPs to the specific needs and cultural differences of the research performing organisations (RPOs) and research funding organisations (RFOs) in the field of physics research.

INFN participate to the GENERA project together with DESY(Stiftung Deutsches Elektronen-Synchrotron), FOM (Stichting voor Fundamenteel Onderzoek der Materie), KIT (Karlsruher Institut für Technologie), Portia Ltd. (UK), MPG (Max-Planck-Gesellschaft ), JOANNEUM (JOANNEUM RESEARCH Forschungsgesellschaft mbH), CIEMAT(Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas), UNIGE (Université de Genève), CNR (Consiglio Nazionale delle Ricerche), IFIN-HH (Horia Hulubei National Institute of Physics and Nuclear Engineering), UJ (Uniwersytet Jagiellonski w Krakowie), CNRS (Centre National de la Recherche Scientifique) and other five Associate and Observer Associations.

## 7 Engagement in Higher Education

### 7.1 Students and Graduate Training

INFN devotes a great deal of efforts and resources in the training of graduate students and young researchers. A large number of INFN researchers supervise higher-level training activities, with the involvement of both INFN staff and University staff associated to INFN research projects for science and technology.

A first indicator is represented by the number of students trained during their thesis work in the INFN labs located either in the INFN national laboratories, centers, or in the Sezioni located in University environment. These theses were completed in connection with INFN scientific activities, either experimental or theoretical, associated with the different Scientific Commissions. Table 7.1 illustrates the number of theses, all the 1<sup>st</sup>- and 2<sup>nd</sup>-level University theses, denoted “Laurea” and “Magistralis”, respectively, and Doctorate theses, completed in 2014 in the Italian Universities or Higher Educational Institutions and related to projects supported by INFN. The theses are subdivided into the different Scientific Commissions. The 2<sup>nd</sup>- level degree is most important for the training of Highly Qualified personnel in the specific fields related to the INFN activities, before the students eventually enroll further into doctorate (Ph.D.) programs. The figures in parenthesis refer to the previous year (2013).

The grand total of thesis completed in 2014 is stable with respect to the previous year, while in 2013 a significant reduction (compared to 2012) was observed. You should also notice that first-level theses (i.e. master theses) are getting less and less importance, and in many universities the students now graduate without the need to complete and discuss a thesis work, a requirement that was mandatory instead in the past.

The volume of students that complete their thesis work within INFN structures is compared in Table 7.2 with the corresponding total number of theses completed in physics courses in all Italian Universities. This last information is provided every year in the on-line database by the Ministry of Education, University and Research (MIUR). The comparison shows that more than one thesis out of three in physics is supervised in INFN Labs, centers or structures, or within research projects cofounded by INFN. The data by MIUR have a delay of one year with respect to the data collected by INFN and for this reason in Table 7.2 the most recent data given by MIUR refer to 2013 for all the II-level theses (Magistralis etc), and for the Ph.D theses.

The Institute provides also fellowships to students at various levels of their careers, and we focus here in particular to the higher-level positions, the doctoral and post-doctoral fellowships (see Table 7.3). Typically, the Ph.D fellowships are for three years, and the post-doctoral fellowships for foreigners are issued to attract highly qualified young researchers from all over the world, to do

	CSN1	CSN2	CSN3	CSN4	CSN5	TOTAL
Master	29	22	20	117	25	213 (222)
Magistralis	67	29+1	32+2	124+2	66+4	327 (298)
Doctorate	27	16	24	49	17	133 (153)
Total	123	68	78	292	112	673 (673)

Table 7.1 Number of students that completed their University Theses in INFN research programs in 2014. The TOTAL in the right column exceeds the sum by row as there are some theses which were done in Special Projects outside CSNs. In parenthesis 2013 figures. In the row “Magistralis” the figures added to the right represent the theses referring to courses (Vecchio Ordinamento) organized according to rules set up before the 2004 university reform.



Year	Masters						Doctorate					
	2014	2013	2012	2011	2010	2009	2014	2013	2012	2011	2010	2009
INFN	327	298	372	386	288	302	133	153	173	174	141	139
Physics(Italy)	N/A	978	821	848	808	868	N/A	449	438	398	371	381

Table 7.2 Comparison of these carried out within INFN activities, with respect to previous years and with respect the total in Physics (data from MIUR, elaborated by L. Canton).

experimental and theoretical research in INFN structures for two years. The remaining post-doctoral fellowships (Assegni di Ricerca) are about 130 and are issued directly by the Institute. INFN also subsidizes indirectly University Fellowships (co-fundings). This year we have registered a substantial increase in the number of PhD Fellowships (56 from 46 of the previous year). This increase is connected with the recent changes in the MIUR regulations for the University Doctorate Schools:

INFN can now enter formally and officially in the managing committee of the University doctoral schools in Physics (and related subjects) by signing a special agreement (“convenzione”) with the Universities. The committee of teachers, the structures, courses, and fellowships can be negotiated between INFN and University departments within this agreement. The specific know-how and expertise brought by INFN

scientists is of great benefit and is very important to increase the qualifications of these Doctorate schools. In the year 2014, seven University doctoral schools signed these special agreement with INFN to manage their Ph.D schools in this sharing regime. The increase in Ph.D fellowships by INFN is a direct consequence of this new policy.

In addition, INFN directly manages the Doctoral school of the GSSI, in collaboration with Scuola Superiore Sant’ Anna (Department for Urban Studies) and with IMT Alti Studi di Lucca (Department of Computer Science). In total 40 Ph.D fellowships were issued in 2014 for the three schools (astroparticle, urban studies and computer science) (see section 3.2).

INFN also participates in the management of the Doctoral School in Accelerator Physics, in collaboration with the University of Rome “La Sapienza”, and subsidized additional 6 Ph.D Fellowships in this field. In this way INFN opened a formal “school of accelerator physics” in a field that saw Italian physicists as important actors for decades

INFN fosters excellence also by awarding annual prizes to the best PhD theses. The selections of the two best PhD theses are done within each national scientific commissions by appropriate committees. The awards are named after eminent Italian physicists of the past (Conversi for experimental physics at accelerators, Rossi for astro-particle physics, Villi for nuclear physics, Fubini for theoretical physics and Resmini for instrumentation development).

INFN FELLOWSHIPS	#
Ph.D Fellowships	56
Post-Doc for foreigners	32
INFN Post-Doc also for Italians	133

Table 7.3 Number of fellowships and Post-Doc positions offered by INFN in 2014.

### *Post-Graduate Education*

On the different topic of post-graduate education, INFN organizes schools at various levels for training students, young researchers and highly-qualified personnel. Many INFN scientists and technologists are involved in the organization of schools, in teaching at university courses (doctorate, masters etc.) and in a variety of training activities.

Amongst the courses organized by Universities in close collaboration with INFN we mention the one held in Bari, “Development and management of data centers for high performance scientific computing”, and the one held in LNL/Padova, “Surface treatments for industrial applications”. Both

are II-level Masters, the one in Bari for the formation of highly qualified personnel that can contribute to the developments of tools, services and innovative products for industrial and scientific applications that require use of massive supercomputing architectures and high-performance computing. The Master organized in Bari has now developed into a new regional network that includes also a new master held in Napoli, “Technologies in High-Performance Scientific Computing”. The one in Legnaro-Padova aims to combine the metallurgic and surface treatments knowledge with the ability to use new technologies and diagnostics, essentially for the innovation of industrial processes. In both cases the aim is the formation of highly specialized super-technologists that can also transfer in innovative industrial environments the know-how fostered in complex nuclear and particle-physics experiments. The group in Legnaro was also involved, besides more applicative works in collaborating with industry, in the purification of the material used by the CUORE experiment.

In addition, a number of schools on special topics are held every year for training young researchers on a variety of topics and subjects. These activities are organized directly by INFN or in collaboration with other institutions. A non-exhaustive list of schools co-organized by INFN is given in Table 7.4. The overall number of participants in 2014 is above 500.

The educational activities detailed above are mainly research-oriented. INFN recently started a new effort to organize schools for professionals, employees of private companies or governmental institutions, to promote innovation and new technologies in the regional/local economical and productive environment. For instance, in Milan a course has been organized on INNOVATION: towards a more effective collaboration between research and industry. In Perugia there has been a technical school on cloud computing for employees of regional public institutions aimed to help the digitalization of Public Administration. A similar school on cloud computing has been organized by INFN in Padua for the technical employees of the local University, and a summer school on cloud computing has been organized in Bari. These activities of innovation and technological training for employees of public or private organizations is gaining momentum. Indeed public engagement is tackling different areas and there are even more initiatives in this direction in 2015, including activities devoted to

the training of young university STEM graduates to improve their skills in new technologies and innovation. This activity is done in collaboration with regional job placement agencies, to improve the opportunities of young graduates from university to find better positions in the job market.

Name of school	Location
XXVI SEMINARIO NAZIONALE di FISICA NUCLEARE E SUBNUCLEARE "Francesco Romano"	Otranto (Le)
IV Seminario Nazionale Rivelatori Innovativi	Catania (LNS)
Euroschool on exotic beams	Padova
N. Cabeo School on Vacuum and broken symmetries	Ferrara
Scuola di Bertinoro ESC14 large scale computing	Bertinoro (FC)
Gran Sasso Summer Institute 2014: Hands-On Experimental Underground Physics at LNGS	Gran Sasso/LNGS
II GEANT4 international school and ROOT analysis concepts	Catania /LNS
XI Seminar on Software for Nuclear, Subnuclear and Applied Physics	Porto Conte (Alghero)
17 <sup>th</sup> Frascati Spring School "Bruno Touschek" in Nuclear, Subnuclear and Astroparticle Physics	Frascati, LNF
XXIV Giornate di Studio sui Rivelatori	Torino
IV Corso di Comunicazione e Divulgazione della Fisica	Borgaro Torinese (TO)

Table 7.4: List of some of the schools organized (or co-organized) by INFN for students, young researchers and professionals, in 2014. The total number of participants exceeds 500.



Despite INFN does not have an explicit teaching mission, its personnel holds courses at all level in Italian HEIs. A recent poll within INFN found out that overall 241 courses, held by 184 people were given in 2014 with an attendance exceeding 8000 students.

## *7.2 Formazione Interna*

Training and long-life learning is not limited to students, but it addresses INFN personnel as a whole. Indeed, from the '90s, INFN started a program of professional Training courses for its employees and appointed a National Committee for professional Training (Commissione Nazionale Formazione – CNF). The Committee promotes and coordinates training initiatives following the recommendations and under the supervision of the INFN Management. The Coordinator of CNF is a member of the Executive Board. Members of CNF appointed by INFN President are: the director of the Personnel Department, the responsible for the Training Office, two Representatives of the Directors of INFN Sections and National Laboratories, one Representative of the persons in charge for Administrative Services, the two Representatives of Researchers and of Technologists, Technical and Administrative staff sitting in the Board of Directors.

The National Collective Labour Agreement (NCLA) for public administration personnel establishes an amount (ranging from 1 to 2% of the salaries budget) to be devoted to training and professional skills development of the scientific, technical and administrative employees. The annual budget for staff training was of 2200 K€ in the year 2009. Starting year 2010, due to financial restrictions by the government, the budget is reduced to 1100 K€

Training activities cover 3 main areas: basic technical and managerial training, scientific and technological training and health and safety training. The Personnel training office activity relies on National, multi-Units and Local Training Plans. For 2014 there were 465 proposals, 336 of which were approved. In the end about 253 courses took place. The total is split as follows (in parenthesis the number of approved proposals actually carried out in each category): 35(30) National courses, 6(6) Multi-Units courses, 8(4) CSN courses, and 5(4) CCR courses. The remaining are local courses (many on safety issues and safety training in general or specific areas). According to NCLA, training plans are devoted to personnel with a contract (either temporary or permanent positions). However, provided that expenses are covered by different sources, exceptions are made to give to people associates to INFN activities the opportunity to take part to some particularly interesting initiatives.

Participants were 886 (46) females and 613(99) males, in parenthesis we report the number of researchers. More details are available on the web page <http://www.ac.infn.it/personale/formazione/> and on a widespread data base containing all information on participants, initiatives, budget, etc.

Training initiatives can be proposed by each employee and accepted as eligible at local level (Director of the Section or National Laboratory) are finally discussed with unions and approved by the CNF.

Two aspects of INFN staff training system are worthwhile noting. The first is the tendency to develop “self-tailored” initiatives based on internal expertise, if available, which are particularly effective in enhancing the personnel’s skills. The second aspect is the building of the training database, which records the training history of each INFN employee and is available for consultation.