In Italy the public debates on the situation of women in research positions started mostly thanks to concurrent actions at the European level, to the publication of official data and to the nomination of Equal Opportunity Advisory Committees in public research institutions.

From 1987 to 2001 the Italian law requires Equal Opportunity Advisory Committee ("Comitati per le Pari Opportunità", CPO) to be nominated in public and government funded organizations, which include universities and research institutes. Additionally, since 1991 it requires Affirmative Action Plans ("Piani Triennali di Azioni Positive", PTAP) to be approved and delivered by Public Organizations every three years, in order to state the strategy adopted by each institution to promote the integration of gender equality into all policies and programs, according to the assessment of the gender mainstreaming process. Since march 2011, a new regulation requires a Guarantee Committee in public administrations ("Comitato Unico di Garanzia", CUG), which replaces the previous ones and should be more effective in monitoring and improving the quality of the working conditions by enforcing welfare and fighting against any discrimination in working places. According to the new institutional duties, CUGs have much wider commitments and, therefore, it is common feeling that gender matters could lose importance within them. An important part of the activity of the above committees has been dedicated to the definition of PTAPs, and to monitor actions’ accomplishment, which is ultimately the most critical aspect, since the Italian law is not well detailed in this respect.

The research in physical science in Italy is carried out by different organizations. We report gender data, till April 2011, from national research organizations, as CNR, INFN, INAF and from University. The career path for research scientists and University professors is divided in three levels, which are basically equivalent in prestige and duties, even though they are called differently in different institutions, from full professorship/grade A/level I to research/Grade C/level III. The Italian Ministry for University and Research (MIUR) drives the activities of these Institutions.

**CNR - National Research Council**

The National Research Council (CNR) is the main research organization of Italy. Its duty is to carry out, promote, transfer and improve research activities in the main sectors of knowledge and of its applications for the scientific, technological, economic and social development of the Country. The research concerns interdisciplinary areas: biotechnology, medicine, materials, environment and land, information and communications, advanced systems of production, judicial and socio-economic sciences, classical studies and arts. CNR is distributed all over Italy through a network of 111 institutes and centres. Currently, CNR counts on 3645 staff scientists, 2179 technicians and 910 technologists, and 930 administrators.

No women are in charge of President, Vice president, and General Director positions; zero out of eight are members of Evaluation Committees; zero out of six are nominated members of Executive Board, three out of twenty are members of Scientific Council (15%), one out of eleven is director of department (9% ) and seven out of one hundred eight are directors of institutes and centres (6%).

For men the disciplines more populated are: Physical, Earth and Environmental, Mathematics and Computer Sciences. For each discipline the distribution of grade A, B and C are
similar; the grade A and B are much more frequent than in women, denoting a clear social-political choice, as reported in Figure 1a.

For women the disciplines more populated are: Biological and Chemical Sciences, with particular depletion on the Physical Science, denoting a clear personal cultural choice. For each discipline the distribution of grade A, B and C are very dissimilar; the grade A is almost absent, as reported in Figure 2b.

**Figure 1:** a) Discipline and researcher grade distribution among male researcher population; b) Discipline and researcher grade distribution among female researcher population.

The ceiling factor calculated on march 2011 for Physical, Earth and Environmental, Mathematics and Computer, Biological, Chemical, and Material Technology Sciences is 2.14, but if we reduce to Physical and Material Technology Sciences the ceiling factor is rising to 6.07.

**INFN - Italian National Institute of Nuclear Physics**

Born in 1951, the Italian National Institute of Nuclear Physics (INFN) is an organization dedicated to the theoretical and experimental research in the fields of subnuclear, nuclear and astroparticle physics, aiming at the study of the fundamental constituents of matter. Research in those areas requires the use of cutting-edge technologies and instrumentation, which the INFN develops both in its own laboratories and in collaboration with the world of industry. INFN employs researchers, technologists, technicians, administrative staff and managers. Research at INFN is carried out in four National Laboratories and in twenty Divisions, located inside Physics Departments of the Universities. The INFN activities are conducted in close collaboration with the academic world: Italian University staff participates in INFN activities with special association agreements and the same rights of the INFN staff (e.g. electorship rights of management bodies).

In December 2010, the permanent INFN staff consists of 584 Researchers (21.2 % women), 232 Technologists (13.8% women), 705 Technicians (5.4% women) and 306 Administrators (82.7% women). Researchers career path foresees three levels, from I (top level: research manager) to III. The increasing fraction of women among researchers at any level, shown in figure 2, is only due to the retirement of male personnel. INFN is managed by a Management Board (Board of Directors) which includes: the INFN President, the members of the Executive Board, the INFN Directors, two representatives from INFN staff personnel, two representatives from Ministries and three representatives from other Italian research institutions (36 persons). In 2011 three women are present in the INFN Board of Directors: one is Director of an INFN Laboratory and two are Directors of Departments. While women are tiny minorities within appointed bodies, they are better represented in elective bodies. Five Scientific Committees propose funding of experiments and projects and monitor the research activity achievements. Their members are chosen by and within the research staff by public elections held in each INFN unit. In 2011, 20 women were members of
the five Scientific Committees (17.4%) and a woman was President of one Scientific Committee.

In addition to the INFN staff, personnel from the Italian Universities collaborates with INFN with special association agreements and participates in the INFN activities with the same rights of the INFN staff (in particular, electorship rights related to the definition of management bodies). In 2005, 940 professors and researchers from the Italian Universities were associated to INFN, among which male professors were more than 75%. Women were the 12.4%.

INAF Istituto Nazionale di Astrofisica

INAF, Istituto Nazionale di Astrofisica, is the Italian institution for research in Astronomy and Astrophysics. It results from merging the historical Astronomical Observatories located throughout Italy and the CNR institutes dedicated to astronomy and space science. The Telescopio Nazionale Galileo (TNG) on the Canary Islands is also part of INAF. In addition to promoting and supporting astronomical research, INAF is also an active agent in spreading astronomical knowledge in schools and the society at large. INAF actively collaborates with the Universities conducting research in astronomy. INAF employs researchers and technologists (560, distributed on 3 levels), and technicians and administrative staff (430). Women represent 34.4% of all permanent staff.

In October 2009, INAF established a CPO. It is composed of 8 effective members, 2 of which are elected directly by the staff, 2 are nominated by INAF and 4 by the Unions.

In 2010, the vice-president of INAF is a woman, and women represent 40% of the members of the executive board (two out of five (40%) and of the scientific council (five out of twelve). Two out of twenty are directors of institutes (10%). The distribution of the percentage of women at different levels in the past 15 year and the comparison with the situation at the universities, just in the field of "Astronomy and Astrophysics" are shown in Figure 3.
University – Academic World

Women in Italy are the majority of the graduate population, with highest presence in Humanities, Arts, Law and Health fields of education. In the year 2009, women represent 57.9% of graduates (58.0% in 2007 and 56.0% in 2003); 40.2% of the degrees in Physical Science were awarded to women (40.9% in 2007 and 40.1% in 2003); 32.0% of the degrees in Physics were awarded to women (34.5% in 2007 and 35.7% in 2003).

In 2009-10 (2007-08) women with permanent positions among university professors and lecturers were 34.3% (33.2%) in the total of Italian faculties: 19.1% (18.5%) Full Professors; 34.1% (33.5%) Associate Professors; 45.2% (45.2%) Researchers. In 2009-10 (2007-08) women among University professors and lecturers in Physics Science were 18.2% (17.6%): 7.6% (7.3%) Full Professors; 17.4% (17.5%) Associate Professors; 27.8% (28.5%) Researchers.

Figure 4: a) Percentage of women through career progression; b) Percentage of women from 2003 to 2009 at different career stage.

OUTLOOK

The situation of women in research positions in every area of physics did not improve significantly in Italy in the last years. The Ceiling factors for the described institutions are reported in Figure 5.

Figure 5: Ceiling factors for CNR, INFN, INAF, and University from 2001 to 2011.

Gender equality in the field of research in physics is still an area of big concern in present day Italy, given also the observation of a general decreasing interest from students, male and female, enrolled in hard science studies and the fast progressive lowering of public funding devoted to research and instruction in Italy. Cultural and organizational actions are still needed to eliminate difficulties in career development,
disproportionate gender distribution in leading administrative and research positions and to encourage young women to undertake and pursue scientific and technical professions. Actions should be taken to improve the working conditions, to remove or reduce obstacles to an equal opportunities practice and to promote the female component in physics research, touching the areas of:

- cultural awareness: education and training; role models;
- fairness of managing processes in the institution: availability and analysis of gender data; clearness of information about plans and strategies, recruitment and selection mechanisms, appointment in governing bodies and power positions;
- mechanisms of research and teaching evaluation;
- quality of working daily life and condition; harmonization between the work and private life.

In addition to and together with institutional Committees, different organisms promote and sustain gender activities and an increasing number of public activities aiming at developing awareness on the situation of women in physics are being organized.