# Mario and Lamberto Allegretti: the eventful life of two Pisan physicists

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*Abstract*: We reconstruct the complex human, scientific and political vicissitudes of Mario (1877-1944) and Lamberto Allegretti (1906-1963), father and son, both graduates in Physics in Pisa, contextualizing them in the framework of academic as well as socio-political relationships, in Pisa and in the other places in which they operated, in the first half of the twentieth century.

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## 1. The Allegrettis

The Allegrettis had an ancient history: originating in Volterra and belonging to knightly rank, they had moved to Siena in the fifteenth century, but at the beginning of the seventeenth century they were already in Pescia, where for a few generations they worked as coppersmiths.

The lawyer Antonio Allegretti (born in 1804) was an official of the Ministry of the Interior, while his cousin Francesco (1809-1867) was a good friend of the poet Giuseppe Giusti. Ernesto (born in 1848), son of Pietro (born in 1819 and Antonio's younger brother), when still very young collaborated in 1865 with the physicist Carlo Desideri (1840-1878), a student and assistant of Luigi Pacinotti's, to give birth to the Pescia Mutual Education Society which largely contributed to increase the level of literacy of the city and of the district. Soon, however, Ernesto moved to Pisa and since the eighties he was an elementary school teacher, as his consort Matilde Allegretti (1850-1933), who was a daughter of Francesco and therefore a second cousin of Ernesto. They had two sons: Mario, born on May 19, 1877, who became a physicist and Lorenzo, born on January 29, 1888 and voted to a military career.

At the beginning of the twentieth century Pisa was a small world suspended between the ancient and the modern lifestyles. In the local bourgeoisie the traditional rites of urban sociality coexisted with the temptations of industry, and the memory of more lively intellectual seasons, when poets from distant lands crowded the salons of the local nobility, accompanied the rise of new factories, first and foremost in the textile sector, then also in those of glass and ceramics. Students (and teachers) flowed to the major university of Tuscany from the entire region, and the few full professors were admitted to the city social elite, of which many of them were already part by birth.

## 2. Mario's life and career before WW2

Since 1893, after Felici's retirement, the Experimental Physics chair was held by Angelo Battelli (1862-1916). Battelli, a lively person from Montefeltro, had obtained his degree in Turin with Nàccari, and was a skilled experimenter, but also a fervent Republican and Freemason, seriously engaged in militant politics, which led him to occupy for several times a seat as a Member of Parliament, following plebiscitary votes in the constituencies of his homeland.

Battelli's personality emerged clearly in a couple of years from his arrival in Pisa with the expansion of the Physics Institute, that he realized according to Matteucci's original project of 1844, whom Felici for thirty-five years had not considered necessary to implement. With the collaboration of Garbasso, in 1896 Battelli did experiments and held lectures on X-rays even before Röntgen published the article describing the discovery.

Mario Allegretti, who had attended the R. Liceo of Pisa, where in July 1894 he had obtained a high school diploma with exemption from the examination in all subjects, by virtue of the marks obtained during the school year 1893/94, at the end of 1894 was matriculated at the Faculty of Science of the Pisa University. Perhaps attracted by Battelli's vérve, the young Mario, after the two-year period for the physical-mathematical license, enrolled in the degree course in Physics, and successfully graduated on July 2, 1899, discussing a thesis on photoelectric currents.

In a sequence perfectly suited to the costumes of the time, a couple of weeks after graduation the local weekly *Il Ponte di Pisa* (of which Mario was at that time a collaborator) announced the engagement of "Dr. Mario Allegretti" with the "*Signorina* Giulia Barsanti, the daughter of the well-known industrialist Mr. Dario".

. Let's take up the thread of Mario Allegretti's studies. The results of his thesis must have been interesting, since they yielded the publication in 1901 of a homonymous article on the *Nuovo Cimento*, followed in 1902 by a second article on the Edison effect. Let's recall that the *Nuovo Cimento*, heir from 1855 of the *Cimento*, founded in Pisa by Matteucci in 1844, was printed in Pisa and Battelli was its director since 1894. The magazine became in 1900 the official organ of the Italian Society of Physics, born in 1897 above all by the will of Battelli himself. The *Nuovo Cimento* represented the "institutional" seat of publication of the most significant scientific results of Italian physicists (but also of foreign scholars and of other scientific disciplines), and for more than a century the official collection was kept, on behalf of the *SIF*, in the library of the Pisa Institute.

At that time, and until the end of 1902, Mario continued to attend the Institute as a volunteer assistant of Battelli's. However, even then the university career was not an easy outlet for graduates, although brilliant. Battelli's assistants were numerous, and some of them (in particular Magri, Maccarrone, Occhialini and Chella) was already more involved in the research programs of the Institute. At the time, however, there was a natural professional outlet for the best graduates, consisting of teaching in secondary school, a profession at that time socially respected and decently paid, which often also allowed the maintenance of a scientific collaboration with the University.

It was then natural for Mario, now engaged and certainly eager to conquer the permanent position that seemed to be a necessary precondition for marriage, to aim for a school chair rather than a university position. Finally, in January 1903, the longed-for nomination came from the Ministry, with the task of teaching physics in the Royal Technical Institute of Teramo where, perhaps not accidentally, Francesco Maccarrone (1877-

1942) had been called in those same months. Maccarrone was another slightly older collaborator of Battelli's, who had also left the competition for a place at the University.

Then there was no longer any reason to postpone the marriage, which indeed became urgent in view of the foreseeable transfer to a location not easily accessible from Pisa. The ceremony was celebrated on February 15, 1903, and on the following Sunday *Il Ponte di Pisa* described it in great detail. In the town hall the witnesses, besides Giulia's uncle Giuseppe Barsanti, were some authoritative citizens: the professors Lazzeri and Della Pura, and in particular "*il Comm. Prof.* Giuseppe Puccianti", writer and curator of Giusti's works (task for which he also availed himself of the advice of Ernesto, as a relative of the poet's friends), director of the local Lyceum, brother of the late Gaetano (esteemed professor of pathology at the University), but above all, as far as we are concerned, father of Luigi (1875-1952), Mario's classmate, who had graduated in 1898 and was destined to occupy fifteen years later the chair of Battelli (who died in 1916) and to hold it for thirty years, assuming a fundamental role for Pisan physics and in the life of Lamberto Allegretti. Present at the wedding ceremony and dinner were the entire extended families, including several still living grandparents (Allegretti, Barsanti and Mecherini), uncles and cousins of every degree, the families of witnesses and even " the assistants of the Physics Institute, colleagues of the groom", but we note the absence of prof. Battelli, probably engaged elsewhere, since he sent flowers and a telegram. Flowers and telegrams arrived also from others, and *Il Ponte* takes care to indicate the senders minutely, including "The graduate students of the Physics Institute".

A few years later (again thanks to the chronicles of the *Ponte di Pisa*) we find the young couple Allegretti-Barsanti at a new wedding, which at the end of September 1906 sees the first cousins Alfredo and Mercedes Barsanti marry with great pomp. The date of this event is important for us because it helps us to explain the little mystery of Lambert's birth in Pisa. He saw the light on October 14, 1906, that is a little more than two weeks after the wedding, while much more predictably his brother Guido was born February 13, 1909 in Teramo, where the family had certainly been living for a long time.

Passionate about mountaineering, in Teramo the prof. Mario Allegretti became president of the *Teramum Sports Club*, which in 1911 and 1913 organized ascents to the Gran Sasso, and in February 1914 he was elected vice-president of the newly established Teramo Section of the Italian Alpine Club. In 1916 we find him involved in the war events, although as a Marshal of the Red Cross, while his brother Lorenzo, with the rank of major, was part of the Arditi and even achieved a US military honor (the Army Distinguished Service Medal)

In 1919 professor Allegretti was again on the Gran Sasso, but now as a guide for an expedition of members of the Pisa section of the *Italian Touring Club*. In February 1921 he was elected vice-president of the governing council of Pisa ex-fighters and in 1923 he was the local councilor for Public Education and a member of the Administrative Council of the University Consortium as a representative of the City of Pisa, a post he held until 1930. His presence in Pisa was certainly facilitated by his transfer, as a professor of physics, to the Technical Institute of Arezzo, and even more by the "command" to the R. Naval Academy of Livorno (certainly at least since 1921).

In 1924 Puccianti asked that he be commanded as his assistant instead of Nello Carrara for the academic year 1924/25. The practice went on for long, as the Academic Senate complained that the command of a teacher would have been economically more expensive than the recruitment of a substitute assistant, but finally (in March 1925!) the long-awaited appointment was made.

In the academic year 1928/29 Mario was appointed as a volunteer assistant at the Electrotechnical Cabinet of the R. School of Engineering. In the meantime, however, prof. Allegretti, who in 1925 had signed the Gentile Manifesto of Italian fascist intellectuals, in 1926 had finally been called to teach Mathematics and Physics at the Liceo "G.B. Niccolini "of Livorno, where he remained until 1930, when he moved to the R. Liceo" G. Galilei "of Pisa, of which he also became Headmaster in 1931, when he was Deputy Secretary of the Pisan Fascio. In 1934 he was also appointed alternate Rector of the Province of Pisa.

### 3. Lamberto's life and career before WW2

Let's now come to his son Lamberto who, after his high school studies in Pisa, where in 1924 he had completed classical maturity, enrolled, as previously his father, in the degree course in Physics at the University of Pisa, where Luigi Puccianti had already been holder of Experimental Physics chair for seven years.

A brilliant but lazy experimenter, Puccianti had long since ceased to carry out personally experimental research, but he continued to direct the work of the students on the issues that had given him a certain fame, even internationally, and in particular on the study of spectroscopy . Puccianti was a traditional physicist, for whom the research had to focus on the experimental verification of hypotheses and the quality of the measures. He did not disdain theoretical considerations, especially on "classical" electrodynamics (his is the re-evaluation of Ampère's point of view on the origin of magnetism as the result of microscopic currents, and the consequent controversy with Giorgi on the most appropriate system of measurement for the description of electric phenomena, in which Puccianti's point of view is undoubtedly more "modern", even if Giorgi triumphed in the definition of the International System). Puccianti even engaged in 1914 (an early date for Italian scientific culture) in a defense of Einstein's relativity, against the anti-relativistic interpretation of the Sagnac experiment. Already in 1927 in his course of Higher Physics he taught the Schrödinger equation, which is the basis of the "new" quantum mechanics, but he was not able to get excited about the most modern developments, and so soon his school ended up marking the step, while elsewhere (and especially in Rome with Fermi, who had also been his student, and who must have learned something from him, at least in the laboratory practice) the new physics took giant steps, both on the theoretical and experimental sides.

Lamberto graduated with honors on October 31, 1928, discussing a thesis on the anomalous dispersion in spectroscopic lines, typical of Puccianti's research themes, but we do not find any trace of a publication of the results he had obtained. In the same year he became an assistant in charge, and starting from the following year he was a permanent assistant. In this capacity he published on the Campano in March 1929 an article on the official settlement of the C.N.R. (with extensive quotations from the inaugural speech by Mussolini), although we must wait 1932 to see its first scientific publication, the article "The structure of the line 6708 of Li observed in emission", to appear in the Atti della R. Accademia Nazionale dei Lincei (another site for the scientific communications of Italian physicists). In that same year, his brother Guido graduated in Chemistry.

At the beginning of 1933 "Nobil Donna Matilde" died, and it is worth remembering that on the occasion all the assistants of the Institute of Physics, from Ciccone to Gentile jr, from De Donatis to Chella and Derenzini participated in mourning.

A few years of relative tranquility followed, marked by sporadic spectroscopy publications, concerning anomalous dispersal measures in various substances, appeared on the Nuovo Cimento in 1934 and 1937, the latter preceded by a communication of 1935 in the aforementioned Atti, while a long review article on ultrasound was published in the Nuovo Cimento in 1938. However, the national and international scenario was rapidly evolving towards the worst.

## 4. The War Years

On August 31, 1939 Lamberto was temporarily recalled to arms and later in 1940 he was assigned, in charge of experimental tests, to the Balipedio of the Royal Navy, in Viareggio, while continuing to hold the course of Earth Physics which had been entrusted to him by appointment in 1939 and which he kept until the academic year 1941/42. In the meantime he had also tried to obtain a post of extraordinary professor of experimental physics in the civilian staff of the R. Air Force Academy, participating in a competition announced in 1941 and ending in March 1942, but the outcome was not favorable, because it was only classified fourth among the five suitable (for the record, Francesco Cennamo and Enrico Medi were the first ex-aequo). In the two subsequent academic years 1942/43 and 1943/44 Lamberto then passed to the course of Electrical Measurements (for chemists). Placed on leave from the University on February 23, 1944 as recalled in the Navy of the R.S.I., however, he took care to ask for confirmation of the teaching on May 8, 1944, obtaining it from the Ministry of National Education on October 5 of the same year.

1944 was however the year of the most dramatic turn for the Allegrettis. The city of Pisa, an important railway junction, was the subject of constant bombing, starting from the terrible one of August 31, 1943, which claimed over two thousand victims. Mario presented his resignation as Headmaster in February 1944 and, like many others, Lamberto's parents chose to leave the city and take refuge in a villa in Pescia, with Elena Leonzi, daughter of Augustus, sister of engineer Luigi, Podestà of Viareggio, and wife of Guido Allegretti, born like him in 1909 and graduated in chemistry in 1932, and with Emma Mercanti, daughter of Luigi and Silvia Allegretti, widow of Paride Chelini and cousin of Mario. There they were found, in the evening of June 14, 1944, by two Polish defectors of the German army who, pretending to be partisans, dedicated themselves to thieves and acts of violence in Pescia, to the point that the partisans themselves denounced them to the public with leaflets. Perhaps feeling protected by the easy alibi that it was a group of overt fascists, the two Poles exterminated the entire Allegretti family. Only little Laura (whom the family called Chicchi), three years old, was saved because the neighbors rushed in early, feeling her crying desperately.

The actual sequence of the facts was definitively clarified in reality only eight years later, with the confession of the peasant Italo Filippelli, in whose house the loot of the robbery had been partially found. Filippelli, who immediately after the massacre had been the main accuser of the partisans, actually admitted to have instigated the two Poles to the action also for rancor following his dismissal by Allegretti in the previous spring, a situation that fits perfectly in the context of private vendettas that characterized the last phase of the conflict and the very early post-war period.

We do not know how, when, and in what version the news reached Lamberto, who after the leave of September 9, 1943 had been recalled again to arms by the Social Republic, but one thing is certain: in the year 1944 he did not resume his teaching and after some time we find him affiliated with the X Mas flotilla led by Prince Junio Valerio Borghese, and in charge of technical assistance to the assault vehicles used by the flotilla. The most precise testimony of his belonging to the X Mas comes from a singular document, declassified by C.I.A. only in 2005. It is a typescript, dotted with typos, dated "Rome, June 20, 1945" and signed by the Captain of the Naval Engineers Antonio Marceglia, who reports on the mission he himself carried out in occupied Italy in the months of March and April of the same year. When he arrived in Milan at the end of March, , he had the opportunity to meet "Professor Allegretti" (as the captain wrote in his report) in the technical office of the X Mas located in Via Aldo Manuzio.

## 4. Lamberto's post-war vicissitudes

At the end of the conflict Lamberto Allegretti, taken prisoner by the Anglo-Americans and later handed over to the Italian Navy, was long questioned and held in the Coltano prison camp until the summer of 1946. Having obtained on September 24, 1946 from the Ministry of Public Education confirmation of the habilitation to teach given him in 1944 by the Ministry of the "self-styled" RSI, Lamberto, in the academic year 1946-47, appears as an assistant in charge at the Bari Faculty of Engineering and in charge of the experimental Physics course, with the task to direct the still almost non-existent Institute of Physics of the University of Bari, for which the Faculty of Sciences assigned on April 2, 1947 an extraordinary fund of 200 thousand lire, compared to the request for a million presented by Allegretti. He sought for the new structure a semblance of accommodation, which he found in 1948 in some rooms of the basement of the Palace of Business and Commerce of Corso della Vittoria, already used as a military prison during the Allied occupation.

Allegretti procured the first instrumental equipment of the Institute, among which the didactic apparatuses that in the current collection of vintage Physics instruments, constitute the most recent part, the Collection of the Institute of Physics, in which they are mainly present tools of the German company Leybold. For 1947/48 the task of teaching Experimental Physics was renewed, and the course of Advanced Physics was added. But already in 1948/49 he was succeeded, in the teaching and direction of the Bari Institute, by Mariano Santangelo (1908-1970), as Allegretti, who at that time was in Alexandria in Egypt, had renounced the 22/10/1948, however, the process of his practice at the Central Commission of Discrimination of the Navy was actually concluded only with the Decree of April 10, 1948 (communicated on June 25, 1948), which resulted in the disciplinary sanction of eight months of suspension from the rank of Captain, while the exemption from the temporary recall in service would start (nominally) on October 12, 1945 instead of September 9, 1943. This was followed by the readmission to service as an assistant from July 1, 1948, with the immediate placement on leave for a year, which was followed by the definitive retirement from November 1, 1949, despite his reintegration among the free professors of Pisa.

We must locate n this period (but we do not know whether in Winter 1947 or 1948) the episode mentioned by Edoardo Amaldi, who recounts that on a winter day Ettore Pancini, a well-known communist, came to his Roman studio and said he had met

Lamberto Allegretti in the street, in a state of great sadness and depression, since he had only recently emerged from a painful judicial action following his membership in the X Mas. Pancini asked Amaldi if he had something contrary to helping Allegretti by inviting him to come and work in the Institute and was very pleased with his positive response. So starting from the next day Allegretti began to attend the Institute and to contribute to the postwar resumption of research activities, which at that time focused mainly on the study of cosmic rays.

There is unfortunately no trace of this collaboration in official documents, but in fact the first postwar scientific publications by Allegretti, appeared in the New Cimento in the years 1951-52, regard some properties of cosmic rays, but the most peculiar feature of these works is in the list of collaborators (Abd El-Wahab, El-Fandi, El-Sherbini) and above all in the affiliation, which appears to be the Faruq I University of Alexandria (Egypt), to which Allegretti already belonged since autumn 1948, together with other authoritative Italian professors of different legal and scientific disciplines, and where he held courses on Atomic Physics and later on Electronics until 1953. Quite singular was, during his stay in Alexandria, his epistolary relationship with the Economer of the University of Bari Michele Di Renzo, to whom Allegretti always referred with the epithet of "Commander" and with whom he seemed to share a strong sentiment of affection for the "Royal Navy" (*sic*) but also for the "X Flotilla MAS", part of which after September 8, 1943 remained in Taranto under the orders of the royal government and the Allies.

At the end of 1953, when he returned to Italy, he obtained the courses of Technical Physics and of "Exercises of Physics III year" at the University of Bari, but between January and February 1954, after some "study" trips (first in Pisa, Padua, Rome and Milan, and shortly later in Paris and Munich) between January and February 1954 he resigned from both positions. In fact, a new turning point in Allegretti's professional career took place in February 1954 when, after an exchange of correspondence between the Ministry of Education and the Rector of Pisa Enrico Avanzi for the request for an opinion (which was favorable), he was commissioned by UNESCO for a mission as Physics expert at the Department of Physics of the Syrian University of Damascus, a mission that lasted until June 1959 and of which we have an extensive final report drawn up by Allegretti himself. It concerns clearly above all the training to the use of scientific instruments sent by UNESCO, while there is no mention of original research. We know from the oral testimony of Bianca Crugnola (widow of Piero Barsanti, 105 years but still very lucid) that at that time also his cousin Aldo (brother of Piero and son of Alfredo), who had graduated in chemistry in Pisa in 1936. collaborated with Lamberto in Syria.

The subsequent documentary evidence in our possession consists in the attestation of the presence of Allegretti in Paris at the OECD (Organization for Economic Cooperation and Development) in 1962 (date of a letter kept in the Archive of the Museum of Science and Technology of Milan), a presence confirmed by the role of OECD consultant attributed to him in the accounts of the episode of January 1963 which finally proved to be fatal. The facts were reconstructed at the end of a long investigation generated by a request from his brother Guido, asking for compensation by the OECD.

In the evening of January 20, 1963 at about 8.30 PM, on a very cold winter day, Lamberto Allegretti slipped on a metal grid and, falling forward, tapped his forehead on the edge of the sidewalk, getting a wound. apparently slight but followed by vomiting. He was helped by a passerby, M. Combette, the only witness of the fall, who accompanied him with his car to the hotel where he was staying. The following day he was visited at the hotel by some OECD colleagues, who found his condition alarming and took him to

the nearby Necker hospital, from which after a few days of useless treatment he was sent to the neurosurgical clinic of *Pitié*, where he was operated without success. and where he died on January 29 without having regained consciousness. The Allegretti family of Pescia and Pisa is now extinct in the male line: Lamberto had never married and Guido had two daughters, Laura and Giulia.

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**References**

*Annuari dell'Università di Pisa* (1899/1900 - 1943/44)
*Annuari del Ministero della P.I.* (1903-1915; 1922-1929)
*Annuari del Ministero dell'educazione Nazionale* (1930-1943)
*Fascicoli di Mario e Lamberto Allegretti,* Archivio generale di Ateneo, Università di Pisa
*Fascicolo di Lamberto Allegretti*, Archivio Generale dell'Ateneo, Università di Bari
*Il Nuovo Cimento* (1855-1960)
*Il Ponte di Pisa* (1893-1934)
Fondazione RSI (2016), *Albo caduti e dispersi della RSI.*
Comando XI Zona – Formazione Perini (1944), *L'eccidio di Collodi 25-26 luglio 1944*
Commission de Recours de l'OCDE (1965), *Decision n. 38 en date du 12 janvier 1965*
Allegretti L. (1959). *Rapport final de l'expert de Physique de la Mission de l'UNESCO à la Faculté de Sciences de l'Université de Damas*
Amaldi E. (1998). *20th Century Physics: Essays and Recollections* (cura Battimelli Paoloni), Roma
Marceglia A. (1945), "Relazione sulla missione eseguita nell'Italia occupata"*, PLAN IVY_0078* (giugno 1945)
Vaglieri L.V. (1950)."Notizie sulle Università egiziane"*, Oriente Moderno*, Anno 30, Nr 4/6 (aprile/giugno) pp. 87-96
Rossi P., Iurato G. (2018). *La Scuola Pisana di Fisica. Pisa,* Pisa University Press