

GGI facilities

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Dept. of Physics, University of Florence


INFN - Florence

Florence September 19-21 2005

A brief history of the building

- Built up in **1924** to guest the Institute of Physics (Univ. of Florence founded the same year). Close to Villa “Il Gioiello” residence of Galileo during the last period of his life.
- University in Florence established in **1321**, as Studium Generale. This moved to Pisa in **1472** (Lorenzo de’ Medici decision). In **1859** the Institute of Advanced Studies was founded and became the seed of the actual University (**1924**).
- **1982**. The Institute of Physics changed to Physics Department.
- Physics Department **moved** to the actual location in Sesto in **2001**.
- At the same time the Department of Astronomy moved from the Observatory to this building.
- In **2004** the University of Florence assigned part of the building to the Physics Department for guesting the Galileo Galilei Institute as a joint venture of University of Florence and INFN.

People in Arcetri

- Under the direction of Garbasso (a **very inspired man**, he was in Florence the analogue of Corbino in Rome) many brilliant young physicists came to Florence:
- F. Rasetti, **1922-1927** (moved to Rome).
- E. Fermi, **1924-25**. In this period he writes the paper on the statistics of “fermions”. Then he moved to Rome. 
- E. Persico, **1926-30**. He substituted Fermi in the teaching of Theoretical Physics. Then he moved to Turin.
- B. Rossi, **1928-32**. In Florence he developed his famous circuit for coincidences. After he moved to Padua.
- G. Bernardini, **1928-31**. After he went to Camerino.
- G. Occhialini was in Florence in the period **1929-31**, then in **Cambridge** and again in Florence, **1934-37** and from here to Brazil.
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Zur Quantelung des idealen einatomigen Gases¹⁾.

Von E. Fermi in Florenz.

(Eingegangen am 24. März 1926.)

Wenn der Nernstsche Wärmesatz auch für das ideale Gas seine Gültigkeit behalten soll, muß man annehmen, daß die Gesetze idealer Gase bei niedrigen Temperaturen von den klassischen abweichen. Die Ursache dieser Entartung ist in einer Quantelung der Molekularbewegungen zu suchen. Bei allen Theorien der Entartung werden immer mehr oder weniger willkürliche Annahmen über das statistische Verhalten der Moleküle, oder über ihre Quantelung gemacht. In der vorliegenden Arbeit wird nur die von Pauli zuerst ausgesprochene und auf zahlreiche spektroskopische Tatsachen begründete Annahme benutzt, daß in einem System nie zwei gleichwertige Elemente vorkommen können, deren Quantenzahlen vollständig übereinstimmen. Mit dieser Hypothese werden die Zustandsgleichung und die innere Energie des idealen Gases abgeleitet; der Entropiewert für große Temperaturen stimmt mit dem Stern-Tetrodeschen überein.

In der klassischen Thermodynamik wird die Molekularwärme (bei konstantem Volumen)

$$c = \frac{3}{2} k T \quad (1)$$


gesetzt. Will man aber den Nernstschen Wärmesatz auch auf das ideale Gas anwenden können, so muß man (1) bloß als eine Näherung für große Temperaturen ansehen, da c im Limes für $T = 0$ verschwinden muß. Man ist deshalb genötigt, anzunehmen, daß die Bewegung der Moleküle idealer Gase gequantelt sei; diese Quantelung äußert sich bei niedrigen Temperaturen durch gewisse Entartungserscheinungen, so daß sowohl die spezifische Wärme als auch die Zustandsgleichung von ihren klassischen Ausdrücken abweichen werden.

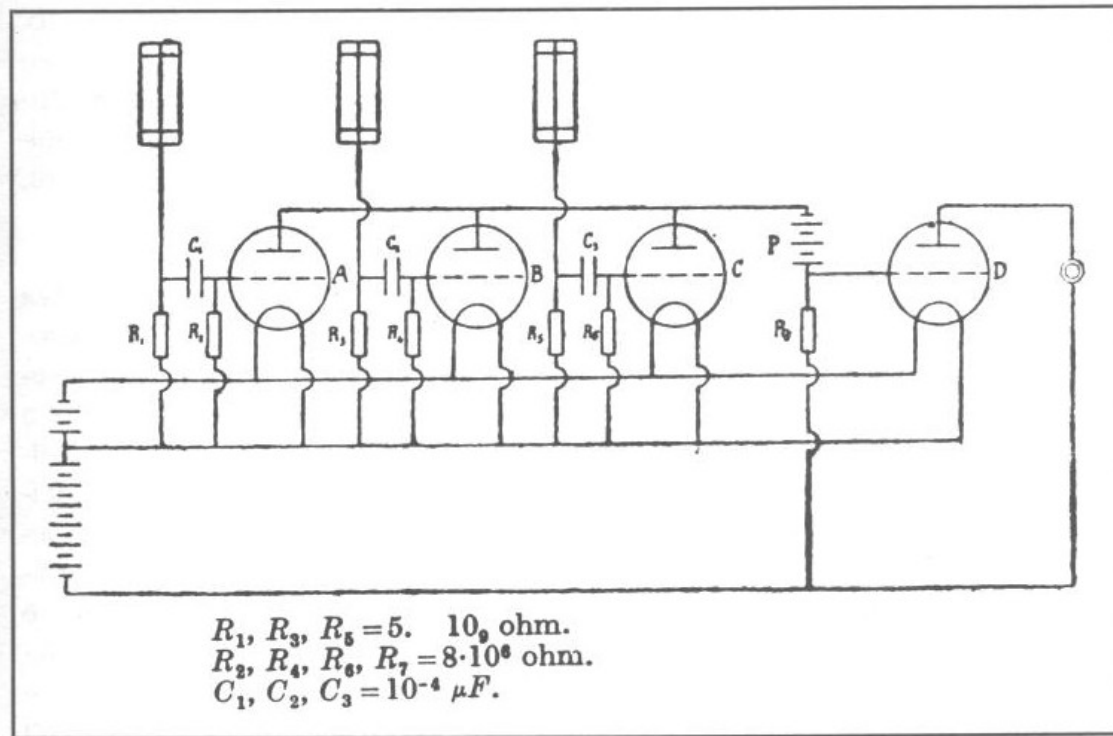
Zweck der vorliegenden Arbeit ist, eine Methode für die Quantelung des idealen Gases darzustellen, welche nach unserem Erachten möglichst unabhängig von willkürlichen Annahmen über das statistische Verhalten der Gasmoleküle ist.

In neuerer Zeit wurden zahlreiche Versuche gemacht, die Zustandsgleichung idealer Gase festzustellen²⁾. Die Zustandsgleichungen der verschiedenen Verfasser und unsere unterscheiden sich voneinander und

Z. Phys. 36, 902
(1926)

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**G. Bernardini and B. Rossi
(Terrace)**

GGI Conf., Florence Sept.19-21, 2005



**G. Occhialini, G. Bernardini, B. Rossi
(Entrance)**

R. Casalbuoni: GGI-A brief...

- The chair of Theoretical Physics was not occupied since 1959 when Morpurgo arrived. He left Florence in 1963.
- In 1963 Morpurgo left and Raoul Gatto arrived. Under his direction a theory group was formed and it grew up strongly. I would like to remind here a few names of young physicists working under the direction of Gatto at that time, as: M. Ademollo, G. Altarelli, G. Gallavotti, L. Maiani, G. Preparata, G. Veneziano and many others. They became known as the “gattini”.

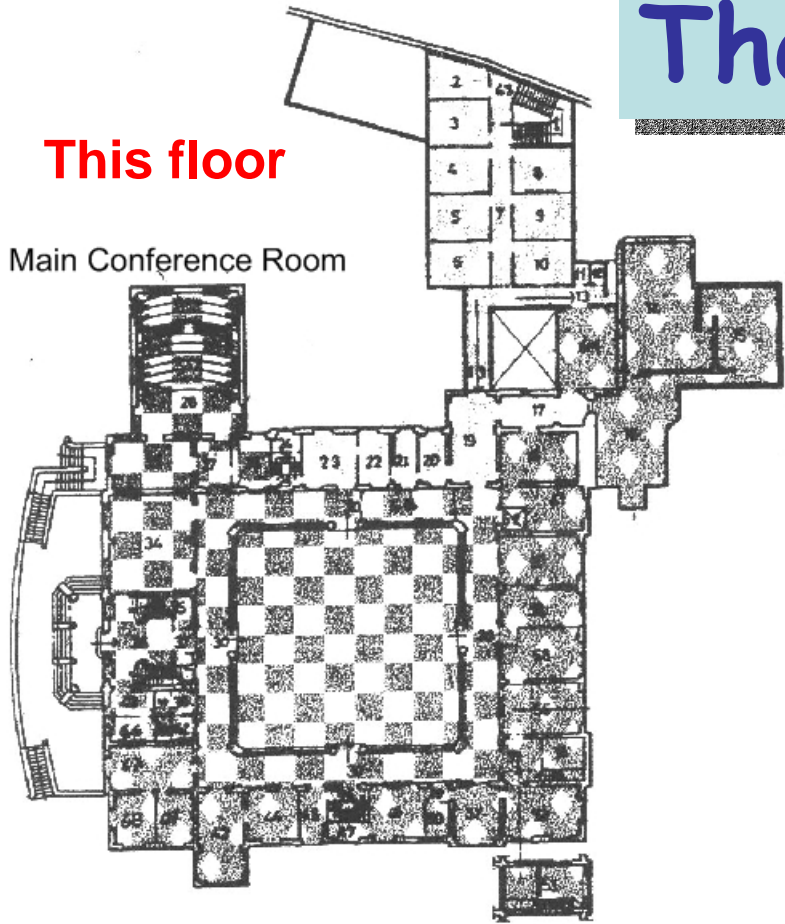


Katzen Schule
(Gift of G. Veneziano to R. Gatto for his 60th birthday)

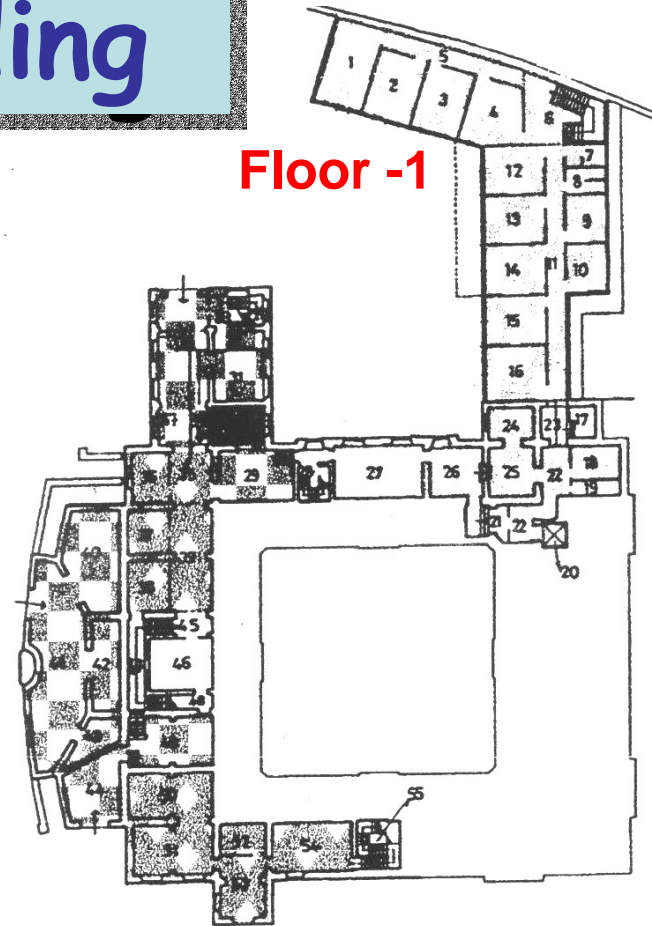
The building

This floor

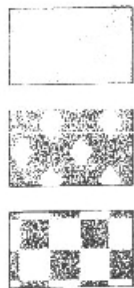
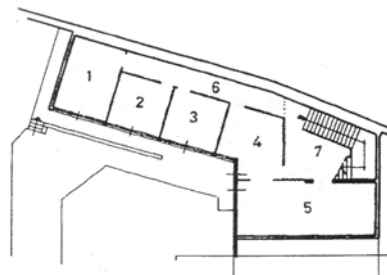
Main Conference Room



Floor -1



Floor -2



GGI

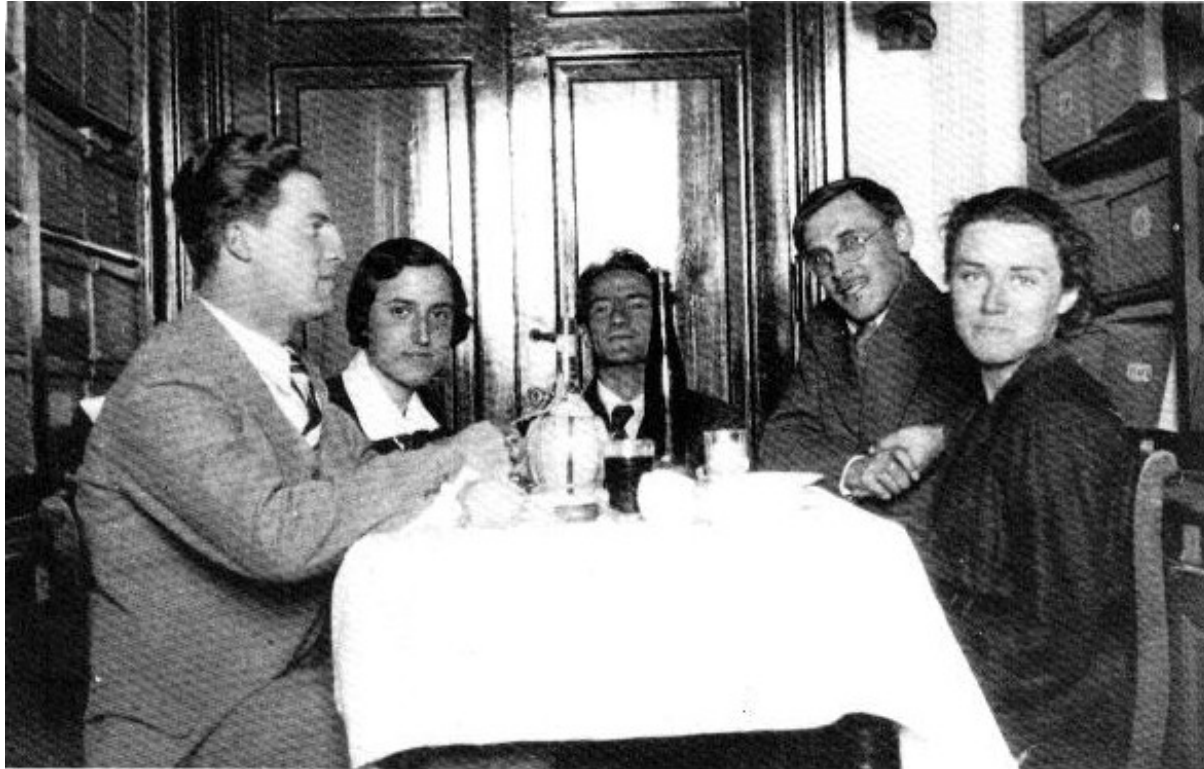
Dept. of Astronomy

Common areas

Facilities

- **Order of 20 offices for about 40 desks each equipped with telephone and PC. Secretariat room, coffee room, 3 common rooms for discussions and small seminars, two lecture halls, one for 100 people and the other for about 70 (plus the room where the Conference Secretariat is located).**
- **Laser printers and Xerox machines will be available.**
- **Fast internet connections by cable and wireless.**
- **Access to on-line physics journals will be possible through the University-net. Scanned files of articles can be obtained by e-mail.**
- **Small library in the Astronomy Dept. Larger one at the Observatory. We are planning for a small collection of reference books.**

- **Our Secretariat will help the participants as far as lodging is concerned. We have contacts with residences offering flats and with hotels. There will be also the possibility of renting apartments.**
- **The University is planning to transform several small buildings in the Arcetri complex into guest houses. There will be rooms and small flats to accommodate about 40 people. **First rooms available in 2008?****
- **The GGI part of the building is now being restored. Works will be finished before the end of February. After providing for the equipment we will be ready to start with the first Workshop on May 2nd.**



**L. Emo Capodilista, B. Crino', G. Bernardini, A.
Colacevich and D. Bocciarelli
(Porter's lodge)**

Steps to the GGI

- **Around 1996** Ciafaloni and Longhi formulated the idea of an institution in Arcetri similar to the Kavli Institute in Santa Barbara.
- **October 2003**, first contacts with Marchesini.
- **January 2004**, meeting in Genova to decide the main lines of the GGI with Barbieri, Becchi, Marchesini and Onofri.
- **May 2004**, the Administrative Council of the University assigned a part of the building in Arcetri to the Physics Department for the GGI.
- **July 2004**, the INFN Council approved the institution of the GGI.
- **November 2004**, University and INFN signed the agreement for the institution of the GGI.