

Enrico Fermi in the Dolomites
(and in San Vito di Cadore):
a cosmic conspiracy



A.

de Angelis

Summer in the Dolomites

- Summer vacations in the Dolomites were a tradition among the professors of the Faculty of Mathematical and Physics Sciences at the University of Roma since the end of the XIX century. Beyond the academic walls, people like Tullio Levi-Civita , Federigo Enriques and Ugo Amaldi sr., together with their families, were meeting with friends and colleagues in Cortina, San Vito, Dobbiaco, and Selva, and enjoying trekking together with scientific discussions
- The tradition was transmitted to the next generations and the younger added to the predilection of the fathers to the long stays in the mountains a passion for exercise, which led them to a more active practice of mountain sports
- The group of via Panisperna was directly connected to this tradition: Edoardo Amaldi, the son of the mathematician Ugo sr., was renting every summer a house in San Vito di Cadore, and Enrico Fermi was a frequent guest. This passion for the mountains naturally involved other colleagues, including Emilio Segre and some of the younger students, such as Giulio Racah, who would later become an outstanding theoretical physicist

Fermi in San Vito

- In the 20s Enrico Fermi (1901-1954) was a guest of Taresina Menegus from Ruseco; later he rented a house in Cortina, and came frequently to San Vito to meet the Amaldi family who were renting from the beginning of the century till the 1950s part of the house of Tita Menegus. One could hear "tutte le sante notti" (every holy night) the noise of hand-cranked mechanical calculators.
- In 1925 the young Edoardo Amaldi (1908-1989), son of Ugo sr. and later first Director of CERN, spent several days with Enrico Fermi, then interim professor of theoretical mechanics in Firenze, during a long bike ride on the Dolomites. A deep friendship was born - and the interest of Edoardo for physics.



Summer 1925 in the Dolomites : not only a new friendship, but also an article changing the history of physics

- 1925 was also the year in which Wolfgang Pauli announced his exclusion principle. Fermi invited in the Dolomites his friend Ralph Kronig (1904-1995), a young brilliant physicist, who had just finished PhD and joined the company.
- In January 1925 Kronig had first proposed electron spin after hearing a seminar by Pauli in Tübingen. Heisenberg and Pauli first rejected the idea...
- Discussing with Kronig, Fermi sketched a paper in which he applied the Pauli principle to an ideal gas, employing a statistical formulation now known as Fermi-Dirac statistics.
 - Fermi, Enrico (1926). "Sulla quantizzazione del gas perfetto monoatomico". *Rendiconti Lincei* (in Italian) 3: 145, translated by Zannoni, Alberto (transl.) "On the Quantization of the Monoatomic Ideal Gas". [arXiv:cond-mat/9912229](https://arxiv.org/abs/cond-mat/9912229) (ref. E. Segre)

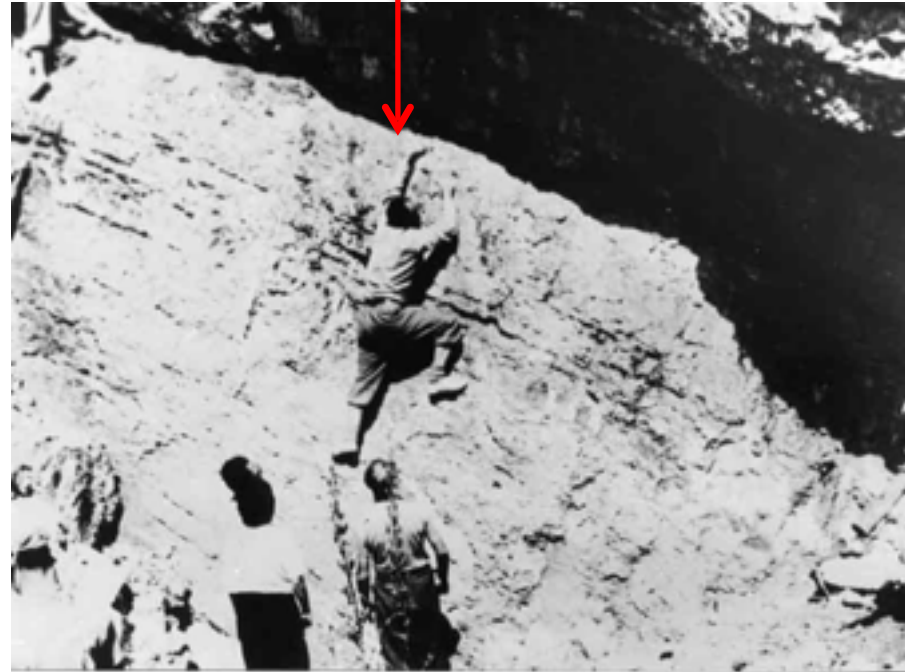


June 1926: the position of Professor of theoretical physics in Roma is open
(Fermi will get it)
Summer 1926: Fermi (left) and E. Amaldi (right) during an excursion.

Emilio Segre' alle
Pale di San Martino



Fermi climbing in the Dolomites



Fermi left to the US in 1938, after the Nobel prize, due to the racial laws...
No visits to the Dolomites before the article on Fermi acceleration.

Back to Italy for the first time in 1949, for the ICRC in Como!
“Una teoria sull'accelerazione dei raggi cosmici”

And later, he came back once in the Dolomites in 1954



LABORATORIO RAGGI COSMICI

- **The last summer of Fermi in the Dolomites** (1954): Vigo di Fassa; visit to the Cosmic Ray Laboratory in the passo Fedaiia
 - Padova, beginning of the '50s: a laboratory was built under the dam that collects water from the glacier of Marmolada to power an electric plant
 - Old instruments by Bruno Rossi
 - Bassi, Cresti, Loria, Zago, Guerriero
 - An electromagnet! Powered by the power plant.
 - Also visited by Blackett and Powell





...you can still visit it now.