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The Fast Analogue Computer of the Milan Relativistic Cyclotron

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In 1965 the variable-frequency relativistic cyclotron of the Institute of Physical Sciences of the University of Milan went into operation. The cyclotron was used in various fields of nuclear physics research and its applications in the medical and technological fields, accelerating particles, mainly protons, up to an energy of 45 MeV. The analogue-digital computer is the only part of the machine that has been conserved in its entirety, and is made up of various components housed in two main racks. The computer was used to optimize the trajectory of the charged particles exiting the accelerator. The extant archive documentation has allowed us to analyze its operation, in particular with regard to the sequence of operations performed to obtain the best configuration of the beam transport system, acting on the length of the path travelled by the exiting particles, the position of the magnetic deflector elements along this path, and the gradient of the magnetic field inside the deflectors. The computer has undergone a conservative cleaning intervention and is currently on exhibition in the main atrium of the Physics Department “Aldo Pontremoli” as an addition to the collection of historical educational instruments.

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