Technology "Undulator for the generation of electromagnetic radiation and related operating method"

The technology mentioned in the public notice is described in the Italian patent IT 102016000013963 titled "Undulator for the generation of electromagnetic radiation and related operating method", also filed in Europe (EP3414978) and nationalized in Spain, Sweden, France, Denmark, and Germany. Specifically, the technology pertains to a flat and adjustable magnetic phase inverter used in the field of electromagnetic radiation generation.



An "undulator," in the context of a device for generating electromagnetic radiation, such as synchrotron light, is a component that plays the crucial role of conditioning the trajectory of the beam of charged particles used to produce said electromagnetic radiation. This component is utilized in synchrotron storage rings, free electron lasers (FEL), cyclotrons, energy recovery linear accelerators (ERL), etc.

In addition to the technology, the patent describes a corresponding operational method that allows for the assembly, adjustment, and optimization of the magnetic configuration and use of the undulator. The technology pertains to the method of creating a flat undulator with a fixed gap and variable phase, characterized by ease of use during the assembly and optimization phases of the magnetic field. This approach enables a reduced overall weight to be moved and eliminates the need for using single housing supports (holders) for magnet positioning. The proposed solution speeds up assembly, measurement, control, and optimization operations of the magnetic field while ensuring accurate magnetic periodicity.

Currently, this type of undulator is installed in the free electron laser source FERMI and in the storage ring of Elettra.