

NEW EQUIPMENT FOR FUSION EXPERIMENTAL RESEARCH & TECHNOLOGICAL ADVANCEMENTS WITH RFX INFRASTR.



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Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA

Panel di riferimento: **ENE**

Titolo della Proposta: **New Equipment for Fusion Experimental Research & Technological Advancements with Rfx Infrastr.**

Codice della proposta: **IR0000007**

Tipologia: **(i) - Empowering**

Proponente: **CNR**

Infrastruttura di Ricerca: **RFX - Reversed Field eXperiment**

Importo totale: **18.089.250,00€**

Di cui al Sud: **3.684.800,00€ (20,37%)**

Abstract:

The project NEFERTARI consists in the substantial innovation of technological and plasma diagnostic systems of the RFX-mod2 device, included among the ESFRI infrastructures and operated by Consorzio RFX and ISTP-Padova. RFXmod2 is a device contributing to the studies on fusion as a carbon-free energy source. It can operate both in the Reversed Field Pinch (RFP) and in the Tokamak configuration. The implementation of the project will develop technological and scientific competencies necessary both to study the RFP as an alternative to the Tokamak and Stellarator for the future fusion reactor and to contribute to the study of Tokamak physics supporting the Italian Divertor Test Tokamak DTT. RFX-mod2 is presently being upgraded, thanks to European grant POR-FESR 2014-202 for technological innovation by Regione Veneto. The refurbishment of the technological plants will guarantee the reliability of experimental operations while the installation of new diagnostic systems will boost the potential of the device towards a more detailed knowledge of the plasma properties. This will allow the RFX-mod mission to be strengthened and pursued in the next ten years. A new vacuum system and an upgraded toroidal field power supply is foreseen. A modern remote handling system will be implemented with the support of Napoli and Padova Universities. Advanced real time magnetic control, a key issue in fusion devices, will be developed in collaboration with the University of Napoli. A significant improvement of several key diagnostics (SXR and Halpha tomography, electron temperature by Thomson Scattering, Neutral Particle Analyzers, neutron detectors, fast ions detectors and ion temperature measurement systems) is proposed with the contribution of CNR ISTP Bari and CNR ISTP Milan. The upgrade of the facilities in CNR ISTP Milan and CNR ISTP Bari complements the project in such a way that an integrated network is consolidated to sustain the fusion research efforts in Italy and in Europe.

Elenco partecipanti alla Proposta:

- Consiglio Nazionale delle Ricerche
- Università degli studi di Napoli Federico II
- Università degli Studi di Padova