

On the implementation of CNEN's Nuclear Fusion Laboratory and the reactivation of the National Fusion Network

*J. G. Ferreira, M. C. R. Andrade

Instituto Nacional de Pesquisas Espaciais (INPE/MCTIC)

O. J. A. Gonçalves Filho, G. O. Ludwig

Comissão Nacional de Energia Nuclear (CNEN/MCTIC)

R. M. O. Galvão

Instituto de Física da Universidade de São Paulo (IFUSP)

A large experimental centre for research and development in nuclear fusion has been pursued by the Brazilian nuclear fusion community since the 1970s. By the end of the 1980s it came close to reality but unfortunately all the attempts to create it eventually failed. Another round of actions has then begun in the first decade of the present century with the creation of such fusion centre as an ultimate goal. The first step to achieve this goal was the establishment, in 2006, of a National Fusion Network – RNF by the Ministry of Science, Technology and Innovation – MCTI (presently MCTIC, after inclusion of Communications). The next critical movement was to attribute to the National Commission for Nuclear Energy – CNEN, in 2010, the task of sharing responsibility for – and progressively taking over of – the nuclear fusion activities carried out at the National Institute for Space Research – INPE around the Spherical Tokamak Experiment – ETE. This was seen as an initial core to be developed into a full implementation of the envisaged Nuclear Fusion Laboratory – LFN, which would be established after transference of ETE to a new laboratory to be provided by CNEN. The new facilities should be prepared not only for immediate installation of an upgraded version of ETE but also to allow for the development of more ambitious experiments, still to be devised to bring fusion activities in Brazil closer to international level. In 2013 it has been decided that the site of the future LFN should be at the same campus as that of Reator Multipropósito Brasileiro – RMB, in Iperó-SP. In 2014 financial support was obtained from FINEP for three purposes: contracting the engineering project of the new laboratory; upgrading ETE; and starting studies towards the conception of the next experiment to be deployed at the LFN. The engineering project was contracted in December 2016 and concluded in March 2018, what now brings the LFN implementation to another critical step: assuring governmental commitment and financial support for LFN construction. This work describes the new laboratory which will be built in Iperó, presenting the status of the plans for LFN implementation and operation, and it also discusses proposals for reactivation of the RNF in the near future.

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