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The ETHERNES neutron facility: innovative way to produce thermal fields

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In the framework of the INFN NEURAPID project (CSN 5), a new moderator design was developed to ensure uniform thermal neutron irradiation in large areas (more than 30 cm in diameter), so that simultaneous exposure of multiple devices, or large objects, can be easily achieved. When the assembly operates with a radionuclide source (such as Am-Be), the neutron field in the area of test has very small fast neutron and photon contaminations, thus allowing thermal neutron exposures in nearly ideal condition. This new moderation principle was demonstrated with the ETHERNES facility at the INFN-LNF. This contribution presents the numerical and experimental characterization of this facility and indicates possible future implementations.

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