Application of Neutron Shield Concrete to Neutron Scattering Instrument TAIKAN in J-PARC

Koichi OKUNO, Masayoshi KAWAI, Hitoshi YAMADA, Takenao SHINOHARA,
Shin-ichi TAKATA, Jun-ich SUZUKI, Kentaro SUZUYA, Kazuya AIZAWA

The main neutron shield for the neutron beam line and neutron spectrometer at J-PARC consists of multilayers of iron and ordinary concrete or boric acid resin and ordinary concrete. However, the available space inside the shield will become limited since a multilayer shield must have sufficient thickness to guarantee radiation safety outside of the shield. Recently, a neutron shield concrete was developed and applied to the shield for the TAIKAN neutron scattering instrument at J-PARC. Neutron transport calculations revealed that the shield's thickness could be reduced to about 70% of that of the original design, which used ordinary concrete. The resulting slim neutron shield structure could leave more space in the interior shielded areas.

[出典] Koichi OKUNO, Masayoshi KAWAI, Hitoshi YAMADA, Takenao SHINOHARA, Shin-ichi TAKATA, Jun-ich SUZUKI, Kentaro SUZUYA, Kazuya AIZAWA : Application of Neutron Shield Concrete to Neutron Scattering Instrument TAIKAN in J-PARC, Progress in Nuclear Science and Technology Vol.4, pp.619-622, Atomic Energy Society of Japan, 2014