A 4π neutron detector design for DESPEC

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The proposed detector for DESPEC comprises a 60x60x80 cm^3 polyethylene block, three concentric (A, B and C) rings carrying BF_3 and ^3He proportional counters. The block comprises a 24 cm central hole going through the whole block from 60x60 cm^2 side to another. The detector configuration can be seen at fig. 1, and at fig. 2.

The central hole allows the entrance of the isotope ion beam to be analysed, which, when impacting on the target located at the centre will be implanted. Once implanted in the target the device will be able to detect the delayed neutrons emitted.

Each ring of the proportional counters has the following features:

Ring A: 16 ^3He proportional counters uniformly distributed along a circumference of 13,6 cm of radius.

Ring B: 20 BF_3 proportional counters uniformly distributed along a circumference of 19,2 cm of radius.

Ring C: 24 BF_3 proportional counters uniformly distributed along a circumference of 24,8 cm of radius.

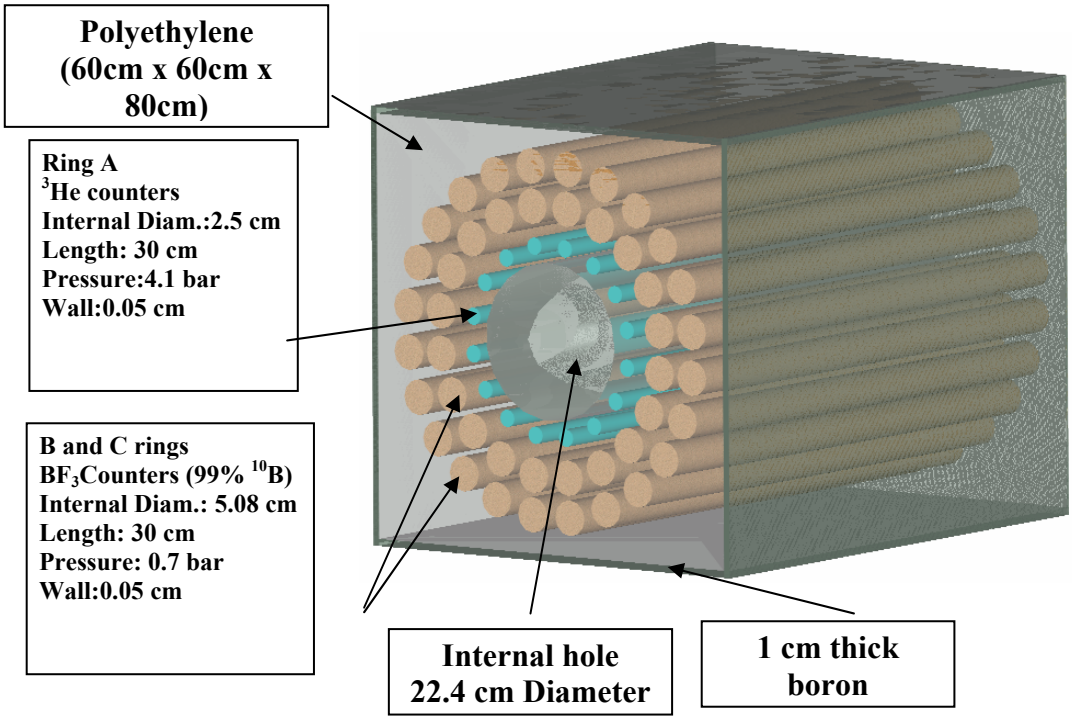

Fig. 1. 3D view of the neutron detector.

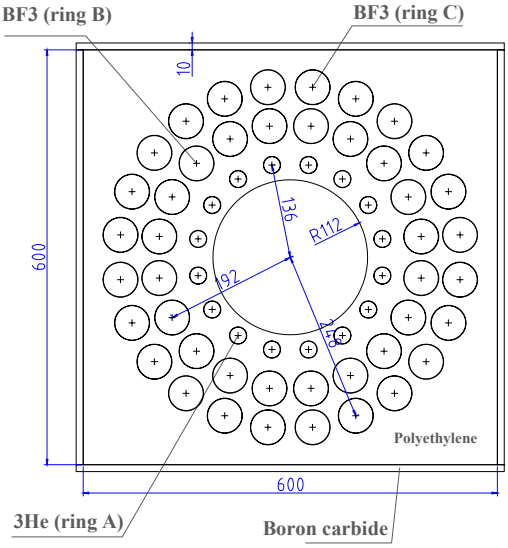

Figure 2. Neutron detector frontal view.