

Title (en)  
NEUTRON-OPTICAL COMPONENT ARRAY FOR THE SPECIFIC SPECTRAL SHAPING OF NEUTRON BEAMS OR PULSES

Title (de)  
NEUTRONENOPTISCHE BAUELEMENTANORDNUNG ZUR GEZIELTEN SPEKTRALEN GESTALTUNG VON NEUTRONENSTRAHLEN ODER -PULSEN

Title (fr)  
DISPOSITIF A COMPOSANTS OPTO-NEUTRONIQUES POUR CONFIGURATION SPECTRALE SPECIFIQUE DE FAISCEAUX OU D'IMPULSIONS DE NEUTRONS

Publication  
**EP 1468427 B1 20120104 (DE)**

Application  
**EP 03731659 A 20030122**

Priority  
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Abstract (en)  
[origin: WO03063183A1] Many applications, for example structural analyses by means of neutron scattering, require slow neutrons generated from fast neutrons which are slowed down by suitable moderators. In arrays known in prior art, a neutron beam with a single spectrum (cold, thermal, or hot) is made available at the places of experiment, which is formed by neutrons with the required energy field and to a small degree also by the other two energy fields. Said arrays are not flexible so as to accommodate different applications with different neutron energies. In the inventive neutron-optical component array (NOA), the beam paths (CBL, TBL) of the individual moderators (CNM, TNM) are combined in a concerted manner so as to create a superimposed neutron beam (SBL) with an effective average beam direction (EBL). The superimposed neutron beam (SBL) has a multispectrum composed of the single spectrums of several moderators (CNM, TNM), whereby a larger spectral width is obtained, making various applications in different neutron energy fields possible. The multispectrum can be further improved in terms of the intensity thereof and the beam quality by adding further neutron-optical components (NOC), particularly in the form of an energy-depending switching super mirror, and by switching between moderators.

IPC 8 full level  
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Citation (examination)  
• CHARLTON L A ET AL: "Spallation neutron source moderator design", NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH, SECTION - A:ACCELERATORS, SPECTROMETERS, DETECTORS AND ASSOCIATED EQUIPMENT, ELSEVIER, AMSTERDAM, NL LNKD-DOI:10.1016/S0168-9002(98)00312-X, vol. 411, no. 2-3, 11 July 1998 (1998-07-11), pages 494 - 502, XP004133296, ISSN: 0168-9002  
• RUSSELL G.J. ET AL: "Target station design for a 1 MW pulsed spallation neutron source", 7 February 1994 (1994-02-07), THE CONSENER'S HOUSE, ABINGDON, OXFORDSHIRE, UK, pages 1 - 13, Retrieved from the Internet <URL:www.osti.gov/bridge/servlets/purl/10120597-cNggLU/.../10120597.pdf>

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