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Macroscopic quantum phenomenon appeared under neutron moving in magnetic channel

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Today's strong permanent magnets offer unique possibilities to develop novel magnetic structures. Practically any imaginable magnetic field configuration can be realized with them. As an example the magnetic structure type of two dimensional potential well was realized to study quantum effects in magnetic and magneto-gravitational traps. Macroscopic quantum effects under neutron moving in such magnetic channels were observed. Energy of observed levels is equal to $3 \cdot 10^{-12}$ eV. Some aspects of the experimental results treatments are discussed.

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