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Crystal acceleration effect for cold neutrons in vicinity of Bragg resonance

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A new mechanism of neutron acceleration in the accelerated perfect crystal is proposed and found experimentally. The effect arises due to the resonance energy dependence of neutron refraction index in a perfect crystal for neutron energies, close to the Bragg ones. As a result during the neutron time-of-flight through the crystal the value of deviation from the exact Bragg condition changes and so the refraction index and the velocity of outgoing neutron changes as well.

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