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Eotvisch-type experiment with cold neutron

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The crystal-diffraction experiment to test a weak equivalence principle for the neutron will be discussed. It is based on an essential magnification of an external affect on neutron diffracting by Laue for the Bragg angles close to right one. Factor of diffraction enhancement for the neutron trajectory “curvature” due to external field can reach magnitude about $\sim(10^8 - 10^9)$ in comparison with a free neutron. Accuracy to measure the ratio of inertial to gravitational neutron masses can reach $\sim 10^{-6}$, that is about two orders higher than best modern result.

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