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Short-Range Gravity Experiment Newton-IVh at millimeter scale
TOMOMI SAKUTA, MIREI HATORI, REIKO KISHI, HARUNA MURAKAMI, KAZUFUMI NINOMIYA, HIRONORI NISHIO, SHUNTARO SAIBA, JIRO MURATA, Rikkyo University, NEWTON COLLABORATION — A large extra dimensional model predicts deviations from the Newtonian gravity at short distances below millimeters. Present NEWTON project at Rikkyo University aims an experimental test to Newton's inverse-square law at the millimeter scale. In order to examine the gravitational force at short range scale around millimeter, we have developed a new apparatus NEWTON-IVh using a torsion pendulum with a pico-precision displacement sensor using digital image analysis system, which was originally developed for a high energy collider experiment at RHIC. We determine the gravitational force by measuring the twisting angle of the torsion pendulum when the gravitational sources are moved around the torsion pendulum. In this presentation, the development status and the results of the NEWTON-IVh experiment will be reported.

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