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The neutron lifetime from a new evaluation of UCN storage experiments

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The analysis of the data on measurements of the neutron lifetime is presented. A new most accurate result of the measurement of neutron lifetime [Phys. Lett. B 605, 72 (2005)] 878.5 ± 0.8 s differs from the world average value [Phys. Lett. B 667, 1 (2008)] 885.7 ± 0.8 s by 6.5 standard deviations. In this connection the analysis and Monte Carlo simulation of experiments [Phys. Lett. B 483, 15 (2000)] and [Phys. Rev. Lett. 63, 593 (1989)] is carried out. Systematic errors of about -6 s are found in each of the experiments. The summary table for the neutron lifetime measurements after corrections and additions is given. A new world average value for the neutron lifetime 879.9 ± 0.9 s is presented.

Primary authors: Mr FOMIN, Alexey (Petersburg Nuclear Physics Institute); Prof. SEREBROV, Anatolii (Petersburg Nuclear Physics Institute)

Presenter: Mr FOMIN, Alexey (Petersburg Nuclear Physics Institute)

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