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Recent Measurements of Vacuum Muonium

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Recently, we have performed measurements on vacuum muonium formation at room and cryogenic temperatures at the the Paul Scherrer Institute. These measurements were conducted in the context of our efforts on the investigation of the gravitational interaction of antimatter and second-generation particles. In our room temperature setup, the muon beam impinged on several targets such as zeolite powder, ablated aerogel and semiconductor carbon-nanotubes. The relative yield and velocity of the observed vacuum muonium are presented. At cryogenic temperature, the targets were dry and superfluid-helium coated aerogel. While vacuum muonium was not observed directly in this case, we did observe the formation of muonium by means of the spin rotation technique. This contribution will present and compare.

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