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Analysis of the MEG experiment to search for mu+ -> e+ gamma decays

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A lepton flavor violating rare muon decay mu -> e gamma is forbidden in the standard model. On the other hand, new theories, such as supersymmetric grand-unification theory etc, predict the branching ratio in the range of 10^{-14}-10^{-12}, which is just below the current experimental upper bound (1.2x10^{-11}) set by a previous experiment. MEG experiment is designed to search for the decay with a sensitivity of 10^{-13}. The physics run was started in 2008. Sensitivity from the initial three months of data is 1.3x10^{-13}, and 90% confidence level limit was set to be 2.8x10^{-11}. In 2009, more than twice the data with respect to 2008 was acquired, hence it is promising the sensitivity will be better than the current limit. In this talk, details of analyses of each sub-detectors (900 litter liquid xenon calorimeter, ultra-light drift chambers and high resolution timing counters) and physics analysis for 2009 data are described.

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