

High precision study of Muon Catalyzed Fusion in D₂ and HD gases

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During 1994÷1996, a series of muon catalyzed fusion (μ CF) experiments was performed in a high intensity muon beam at PSI by the PSI-PNPI-IMEP-LBNL-TUM collaboration. These experiments aimed at detailed studies of the muon catalyzed dd fusion ($d\mu d$ fusion) in D₂ and HD gases. A time-projection hydrogen ionization chamber was used to detect the muon stops and the dd fusion reaction products. The applied experimental technique allowed to determine with high absolute precision the major parameters of the processes involved in the $d\mu d$ fusion. This report presents the results of final analysis of the experimental data. The obtained results are compared with calculations based on recent μ CF theories.