APR11-2011-000210

Abstract for an Invited Paper
for the APR11 Meeting of
the American Physical Society

Abraham Pais Prize for History of Physics Talk: Shelter Island, Pocono, Oldstone, 1947-49, Revisited

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The historic June 1947 Shelter Island Conference was the first of three small conferences on theoretical physics sponsored by the National Academy of Sciences. It opened with a report of the results of Lamb and Retherford's and those of Nafe, Nelson and Rabi's experiments on the spectrum of hydrogen. The challenge to explain the accurate numbers they had obtained stimulated a renewed interest in quantum electrodynamics (QED) and became the point of departure for the post World War II developments in quantum field theory: effective Lorentz invariant computational methods, Feynman diagrams, renormalization theory. The recent discovery of Hans Bethe's extensive notes on the Shelter Island conference allows a reconsideration of the role played by Kramers, Oppenheimer and Weisskopf in these developments. The 1948 Pocono Conference at which Schwinger and Feynman presented their formulation of QED, and the 1949 Oldstone conference, at which Dyson summarized his researches and his views regarding renormalizability, give proof of the deep changes in the conceptualization, description and representation of nature that had been brought about by the work of Weisskopf, Schwinger, Feynman, and Dyson.