

Chang's Contribution to the Quantization of Constrained Hamiltonian System

Yin Xiaodong^a and Zhu Zhongyuan^b

^aCapital Normal University, Beijing and ^bChinese Academy of Sciences, Beijing

Abstract:

This paper analyses Chinese physicist T.S.Chang's contribution to the quantization of constrained Hamiltonian system. In 1933 Dirac investigated the cases of constrained system with missing momenta, but his final equation still contain quantities of unknown Lagrange multpliers and, are thus not suitable for passing to a quantum theory. Concerning this subject, during 1944-1946, T.S.Chang established a Hamiltonian theory with a modified Hamiltonian function and canonical variables for systems with auxiliary and/or missing momenta, and carried out their quantization. These results were published in 2 papers in Proc. Roy. Soc. Of London, A183(1945)316 which was communicated by Dirac, and Proc. Camd. Phil. Soc. 43(1947)183. We have not found any other contributions to this topic earlier than these papers. In 1949 Dirac gave a new well-known systematic formulation, which has been the standard analysis of this problem.