Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Bose's Method: A Logical Error TEMUR Z. KALANOV, Home of Physical Problems, Pisatelskaya 6a, 700200 Tashkent, Uzbekistan — The critical analysis of Bose's method—starting-point of Dirac's method of secondary quantization—is proposed. It is proved that Bose's method for derivation of Planck's formula stated by S.N. Bose in the article "Planck's law and light quanta hypothesis" (1924) contains logical errors (i.e. errors in definition of concepts). The main logical error is as follows [1]: the method does not take into explicit consideration an interaction between radiation and substance, i.e. the subsystem "photon gas" (radiation) is defined as the isolated subsystem which does not interact with the subsystem "molecule gas" (substance). (Such definition of concept "photon gas" represents a logic error because presence of radiating substance is an essential condition of existence of temperature and thermal radiation). Conclusions: firstly, this error leads to the incorrect statement that photon gas (quantum gas) is characterized by temperature; secondly, this error puts obstacles in the way of correct definition of the important concepts "phase cell" and "empty phase cell" which concern substance; thirdly, this error enters into the starting-point of Dirac's method of secondary quantization and, hence, into the standard theory of physical vacuum (i.e. the theory of "empty phase cell"). Ref.: T.Z. Kalanov, "On statistics of photon gas", Doklady Akademii Nauk SSSR (Russia), Vol. 316, No. 1 (1991), p. 100.

Temur Z. Kalanov
Home of Physical Problems, Pisatelskaya 6a, 700200 Tashkent, Uzbekistan

Date submitted: 28 Dec 2005 Electronic form version 1.4