

CARNEGIE INSTITUTION OF WASHINGTON

DEPARTMENT OF RESEARCH IN TERRESTRIAL MAGNETISM

Feb. 17, 1927
36TH STREET AND BROAD BRANCH ROAD,
WASHINGTON, D. C.,

Professor E. Schrödinger
California Institute of Technology
Pasadena, California

Dear Professor Schrödinger:

I thank you very much for your letter written on the California Limited. The change of date which you desire to make is satisfactory to everyone. I mentioned at the colloquium last night the two topics which you suggested for your lecture here. The general opinion was that both of them were excellent. There seemed to be somewhat more interest expressed in the laws of conservation of energy and momentum than in the Compton effect. I think it is best to leave the choice to you. Meanwhile we shall try to learn as much as possible about both.

The point which worries me most in connection with your theory is the possibility of finding something corresponding to the classical $\frac{2}{3} \frac{e^2}{c^3} \ddot{x}$. It seems to me that the connection between the waves representing matter and those representing light will remain somewhat obscure before this is done. A clear treatment of the Compton effect can perhaps suggest a way of doing this because on a classical picture it is this force that gives rise to radiation pressure and gives a total transfer of momentum to electrons which corresponds to that observed in C.T.R. Wilson fish tracks. Gordon uses the $\psi\bar{\psi}$ distribution of charge density to compute the

probability of radiation according to classical retarded potentials. This may make it impossible to draw any conclusions.

It seems to me that quanta and material particles are now treated by very similar methods. It seems strange that the polarization of quanta is not explicitly taken account of for matter. Can the electron spin be interpreted as a circular polarization?

I hope you do not mind my foolish speculations. I am simply anxious to get them out of my system and, of course, I do not expect you to write me about them. When I see you here I hope to get these and some other points straightened.

Meanwhile I am very grateful for your kind consideration for our colloquium.

Yours very sincerely,
J. Breit