



Department of Physics
University of California
Berkeley, Calif.

Aug. 30, 1941

Dear Professor Yukawa:

Thank you very much for your letter and the reprints. I am sorry this letter has been delayed because I was taking a vacation in Vancouver.

Regarding Dr. Sakata's work on the pseudo-scalar meson, Professor Oppenheimer noted a mistake in the calculation, and Nelson has gone over the calculation. He found that the life-time of the meson is far too short if the constants from β -decay are used.

As for the scattering of mesons, Schwinger has treated the problem of a meson field strongly coupled to a spatially extended source and obtained isobaric states as suggested by Heitler and Bhadani. I presume you have seen the recent note in the Phys. Rev. by Oppenheimer and Schwinger which tells some of their results.

Pauli is visiting here at present, and will stay for about a month. There are also several of Oppenheimer's former students, Carlson, Serber, Lamb, Dancoff, Morrison, and Keller here at present, but they will all leave soon. Also, Schwinger, Rarita, Christy and Cooper are no longer here so we shall not have many people left. The only addition is

Sachs who has taken Schwinger's place as Oppenheimer's assistant.

The main topic of interest here now is the nuclear force due to mesons strongly coupled to extended sources. Carlson is making some calculation in slower theory assuming the primaries are protons which produce many (~ 8) mesons in a single collision. I am working out commutation relations for field quantities of a particle with spin $3/2$ to see whether they commute outside the light cone in the presence of an E.M. field.

Please give my best regards to Dr. Sakata and the rest of your colleagues.

Yours respectfully,
Shuichi Kusaka