Fermilab

November 11, 1998

Peter Cooper
MS 122

Dear Peter,

Thank you for the presentation of the CKM R&D plan at the recent PAC meeting. The Committee recommended approval of the R&D plan, and I accept that recommendation. Their comments follow:

The physics addressed by measuring $K_L^0 \to \pi^0 \nu\bar{\nu}$ and $K^+ \to \pi^+ \nu\bar{\nu}$ is important. Both of these decay modes allow measurement of CP violation parameters in a way that is relatively free of theoretical uncertainty. These measurements will allow testing of the Standard Model of CP violation in the kaon system. A measurement of the decay $K_L^0 \to \pi^0 \nu\bar{\nu}$ would determine the parameter η. A measurement of $K^+ \to \pi^+ \nu\bar{\nu}$ would determine a contour in the $\rho\eta$ plane. The theoretical uncertainties are expected to be on the order of 10% or less.

The Committee believes that it is important to maintain the option of a vigorous kaon decay program in the Main Injector era. Both the KAMI and CKM collaborations presented their plans for R&D. The Committee finds the R&D plan of the KAMI experiment to be sensible and necessary for demonstrating the feasibility of the experiment's measurement of $K_L^0 \to \pi^0 \nu\bar{\nu}$. Accordingly, the Committee recommends approval of R&D for this project. The Committee finds the R&D plan of the CKM experiment to be sensible and necessary for demonstrating the feasibility of the experiment's measurement of $K^+ \to \pi^+ \nu\bar{\nu}$. Accordingly, the Committee recommends approval of R&D for this project. The KAMI and CKM groups should be encouraged to collaborate on joint R&D projects where possible, for example, for photon vetoing.

Funding for this R&D will be difficult to provide in FY 1999; however, we will attempt to meet your most pressing needs. We may need to depend on our annual appeal to the Division of High Energy Physics for these funds. Please work with Ken Stanfield to negotiate a Memorandum of Understanding. Upon signing of an MOU, the R&D effort will be designated E-905 - CKM R&D.

Sincerely,

John Peoples

cc: A. Kronfeld
K. Ellis
A. Firestone
J. O'Fallon