



BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.

Upton, Long Island, New York 11973

(516) 282-3767
FTS 666-3767

Office of the Director

November 20, 1990

Dr. R. S. Hayano
Physics Department
University of Tokyo
7-3-1 Hongo, Bunkyo-Ku
Tokyo 113, Japan

Dear Dr. Hayano:

Thank you very much for your presentation of the Letter of Intent for a Two-Arm Electron/Photon/Hadron Spectrometer at RHIC.

The Committee was favorably impressed with your design concept for a two-arm spectrometer with good electron identification for low and intermediate pair masses, extending up to J/ψ . The additional benefits for hadron measurement make this an interesting approach for particle measurement at RHIC, albeit with small acceptance. The main concern at this stage is that the cost is rather high for a detector which, in the Committee's view, would be one of the more specialized RHIC experiments. The reason for this is that your design, although it addresses some of the most compelling and technically challenging of the probes which have been suggested for a quark-gluon plasma, would fall short of the needs for a general purpose device, primarily because of its small acceptance. For example, an acceptance of approximately 1% at the J/ψ , with an estimated detection rate of only 40 per day from central Au+Au collisions, is viewed as being too small for systematic studies with respect to the Drell-Yan background. A more logical role for your detector would be as a specialized, high precision experiment focussing on the lower mass electron pairs. You are urged to determine if the cost of your detector can be significantly reduced by restricting your goals to this very important physics. Alternatively, you should consider whether the very substantial resources of your collaboration could not be aligned with others to achieve your physics goals in the context of a larger experiment.

Your very interesting detector raised several technical issues. Regarding the RICH counters, there was concern about background hardness, multi-hit resolution for close Dalitz pairs, and the heavy metal shield was feared to create more than it cleans up. This needs a GEANT study. The claimed high luminosity capability needs a crisper demonstration. The Committee was pleased to see your aggressive plans to carry out R&D which will address these issues in preparation for a Proposal and is happy that funding for this activity may be supported under the U.S./Japan Agreement.

Finally, it will be necessary for your colleagues from Tsukuba to make a definite commitment to one experiment by proposal time.

Page 2

Letter to Dr. R. S. Hayano

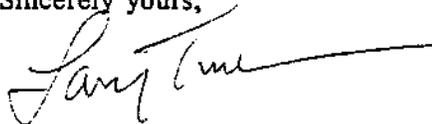
November 20, 1990

You will find enclosed for your consideration an independent cost estimate for your detector done by an internal group of experts. We do not regard it as definitive, but rather as indicative of areas that may present large cost uncertainties as well as those that are probably reasonably under control. The methodology that was used is also described. Surely, with the help of interaction with you, this will evolve into a more reliable procedure and cost estimate by proposal time.

In the near future, a formal Call for Proposals will be issued. The Call will contain further information regarding the format of and issues to be addressed in the Proposals.

Good luck in considering this advice and in all the work you have facing you in the coming months.

Sincerely yours,



T. Laurence Trueman
Associate Director
High Energy and Nuclear Physics

TLT:lz

Enclosure

cc (w/o Encl): HENP PAC Membership