July-26-2003

JINR Discussion Memo

Y. Fujii

1.What were done

July 22
a) Ceremonial Meeting with JINR Vice-Director A.Sissakian and DLNP Director A.Olchevski, and got signature on MoU.
b) Discussion with D.Mjavia (David), P.Evtoukhovitch (Peter), W.Kalis (Walter) about plans.
c) Discussion with D.Mjavia, P.Evtoukhovitch, Z.Tsamalaide (Zviadi), V.Samoilov (Valentine), and W.Kalis over dinner.

July 23
a) Saw activities in JINR
- pion-N reaction
- di-baryon search
- muon-catalized atomic/material studies
- lepton number violation
- Accelerator R&D for TESLA
- Aerogel fabrication
- Mini-cell Drift Tubes for DELPHI-muon, D0-muon
- Single-wire Drift Tubes for ATLAS-muon
- Straw Tubes for COMPASS and ATLAS Forward Tracker
- Cathode-readout MWPC for CMS-muons
- Large-Drift-Length SWDC for CMS-muons
- Machine Shop

b) Detailed discussion with Plastic Scintillator Factory (Mr.Victor)

2.Plans
a) What JINR will do, and KEK will do
* See Budgetary Issue. They can not promise massive work before they get ISTC budget.

- JINR will provide 20 pieces of machined-glued Rect-Tile Mega-tiles. The target delivery date is early January 2004, so that they can be tested at the beam test of March 2004.
- JINR will try to deliver Strip-Array Mega-Strips also. Design (machined or glued) is to be determined soon.

- KEK will send detailed engineering drawing of the Mega-Tiles and Mega-Strips with precision specification, and performance specification of scintillator to use such as attenuation, photon-yield, reflection index, etc.

- JINR and KEK will start discussion on deign of molded Mega-Tiles/Mega-Strips. We hope that these can be tested at beam tests in 2005.

- JINR will do studies on W-plate fabrication, not as their duty but as purely their interest.

- JINR has strong interest in muon system. We will start discussion on muon collabration AFTER calorimeter collaboration shows some good results.

b) Scintillator Detail
Victor showed several samples of their products;
- molded shashlik tiles
- molded strips with fiber groove
- machined tiles with fiber groove
- White painted, or metal coated, or no process on sides.
  i) Precision of molding is 20 micorn (did for HERA-B EM shashlik)
  ii) One set of die can make 250k tiles (did for Phenix EM shashlik)
  iii) Reflective white paint thickness is 100 micron. Can be thinner.
  iv) Reflective metal coat thickness is several microns (metalization in vaccuum).
  v) White paint gives better light yield and uniformity (<3% everywhere).
  vi) Both coatings are done by machine (not by hands).

  vii) Victor thinks that gluing individual tiles on a precise-allocation table should be easier, faster, stronger and cheeper than Mega-Tile fabrication, if you take into

account filling isolation groove with paint.
- Fujii thinks this is worth trying.

viii) Victor thinks that groove shape need not to be a key-shape to hold the WLS fiber in it. Very slightly trapezoidal groove, very slightly narrower than the WLS fiber diameter, can hold the fiber in place, after temper heat treatment.
- Fujii thinks this is not so trvial, and careful examination is needed, especially on assembling procedure.

c) Budgetary Issues
- They can start small works with their present budget. However they will need to get ISTC budget to proceed massively.
- They will submit ISTC proposal as soon as possible.
- They will inform us the acception number of their proposal.
- We will write a supporting letter for their proposal.
- ISTC program committee will be late October.

3. Odds and Ends
- SCAR is developping photo-cathode of Q.E.70%. They have been contacting with Hamamatsu for mass fabrication.

4. Summary Table of JINR programs

Lab.of High Energy	Particle Physics	Nuclear Problems	Nulcear Reactions
Nuclotron/Phasotron	Serpukov U-70	Phasotron	Super-Heavy Nulcei Synthesis
NA45 (Pb+Au)	NA48 (eps'/eps)	DIRAC;SciFi	
	NA48/1,2	NOMAD (neutrino)	
NA49 (Pb+Pb)	COMPASS	HARP (neutrino)	
CMS;muon	CMS;mu,HCAL,PreSH	DELPHI;muon	
ALICE;muon,magnet	ATLAS;HCAL,TRT	ATLAS;muon,IT	
	HERMES;miniDC-VTX		
	HERA-B;OuterTracker		
	H1;HCAL		
STAR	STAR;EMC	CDF;muon	
Phenix		D0;muon	
HADES;Precision DC	Borexino	ANCOR	
WASA		TUS (satellite exp)	
	TESLA accelerator	TESLA accelerator	
	CLIC accelerator		