

IP diagnostics

Toshiyuki Okugi

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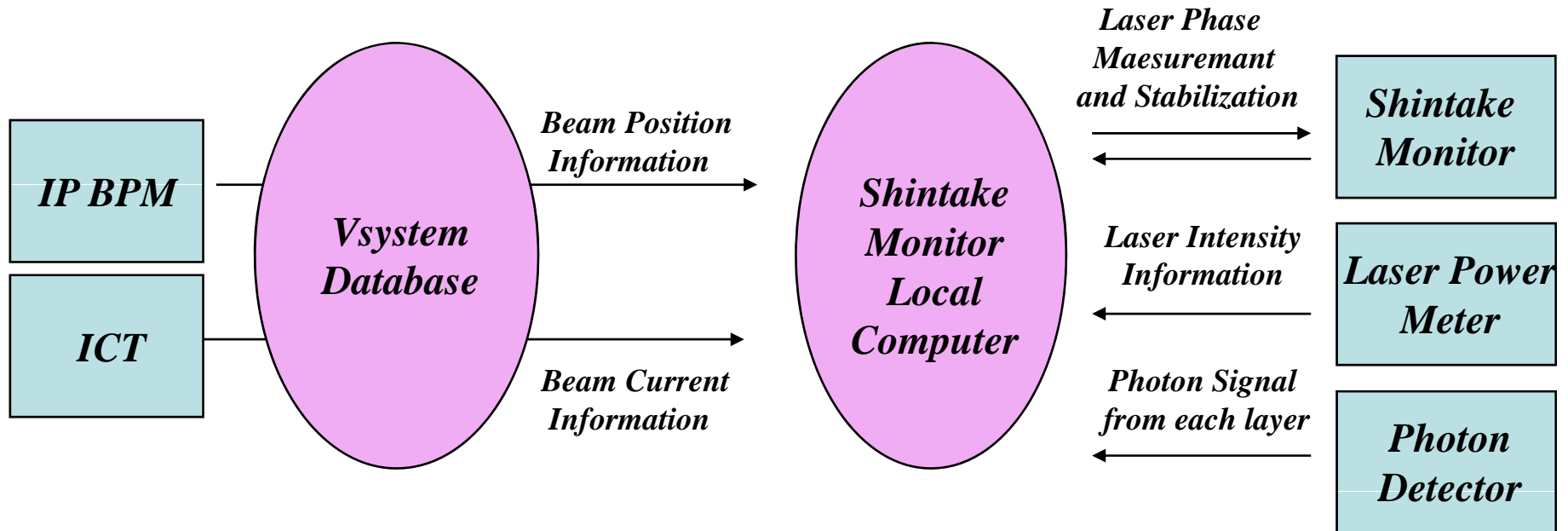
ATF2 Software mini-workshop

LAL, Orsay

Data Analysis of Shintake Monitor Group

At the commissioning phase,

Shintake monitor group will construct their own data taking system with local computer, and we cannot get any beam size information at the Shintake monitor commissioning phase.



The beam size analysis of Shintake Monitor is used the beam information from ATF control system.

IP BPM for Shintake Monitor

*Since **IP BPM** will be stable with respect to the Shintake Monitor table, we can measure the beam position w.r.t. Shintake Monitor fringe pattern.*

*Shintake monitor group can be analyzed the beam size without IP feedback. However, **the intra-train IP feedback** will be necessary **for multi-bunch measurement**.*

Carbon Wire Detector

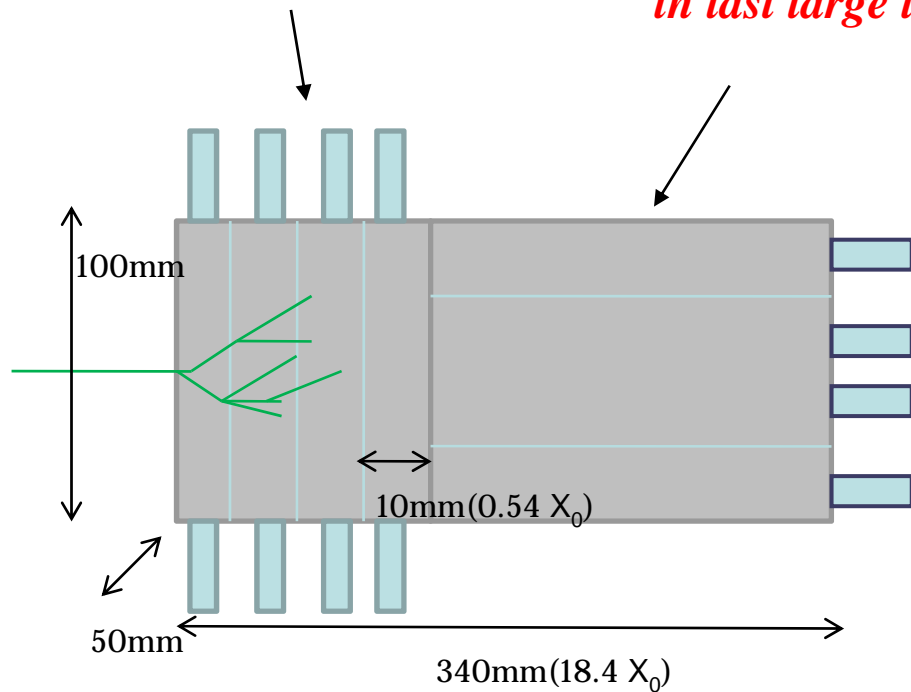
Shintake Monitor group request that the photon detector for Carbon wire should be independent to that for Shintake monitor.

The Cherenkov detector for Carbon wire will be prepared beside to Shintake detector. The Carbon wire measurement is purely independent system to the Shintake Monitor.

Photon Detector for Shintake Monitor

Most of signal is deposited in first 4 layers .

Most of noise is deposited in last large layers .

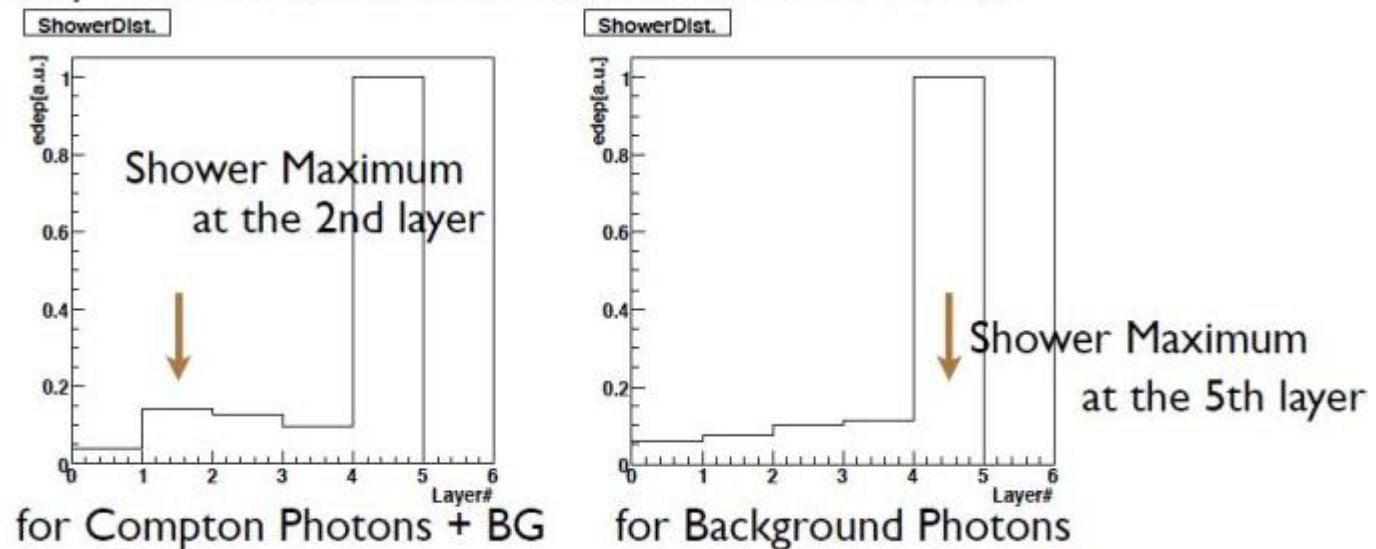


We can separate the signal and noise by using the difference of energy deposit.

Test of Photon Detector Performance

The Compton photon signal, which is normalized by laser and beam intensity, is detected by comparing each laser phase with respect to the beam position.

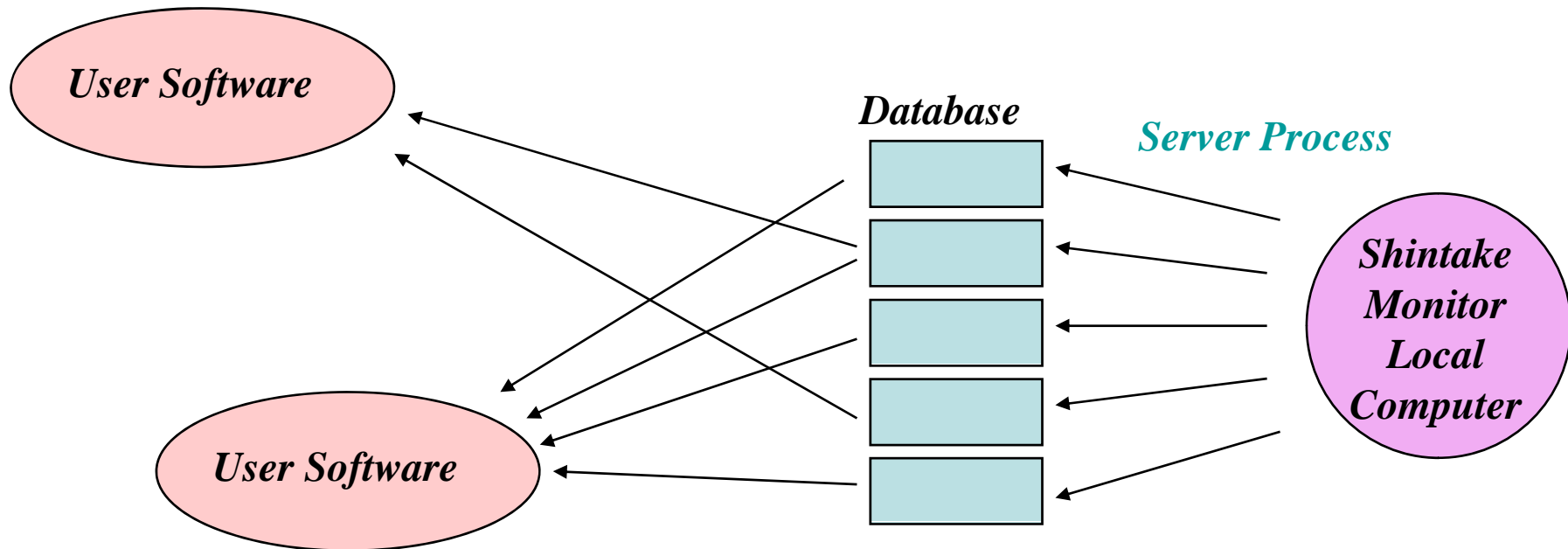
Preliminary Results of the shower distribution measurement



*Performance of photon detector is tested in ATF beamline
with pulsed laser wire signal (same photon distribution).*

We found the signal and noise can be separated .

Beam size tuning with Shintake monitor information (Tentative Plan)



*When the beam size analysis was finished,
the Shintake monitor local computer put the beam size information and so on
through the Vsystem database.*

*Which kind of information should be necessary for the beam tuning ?
We should be communicated with the Shintake monitor group*

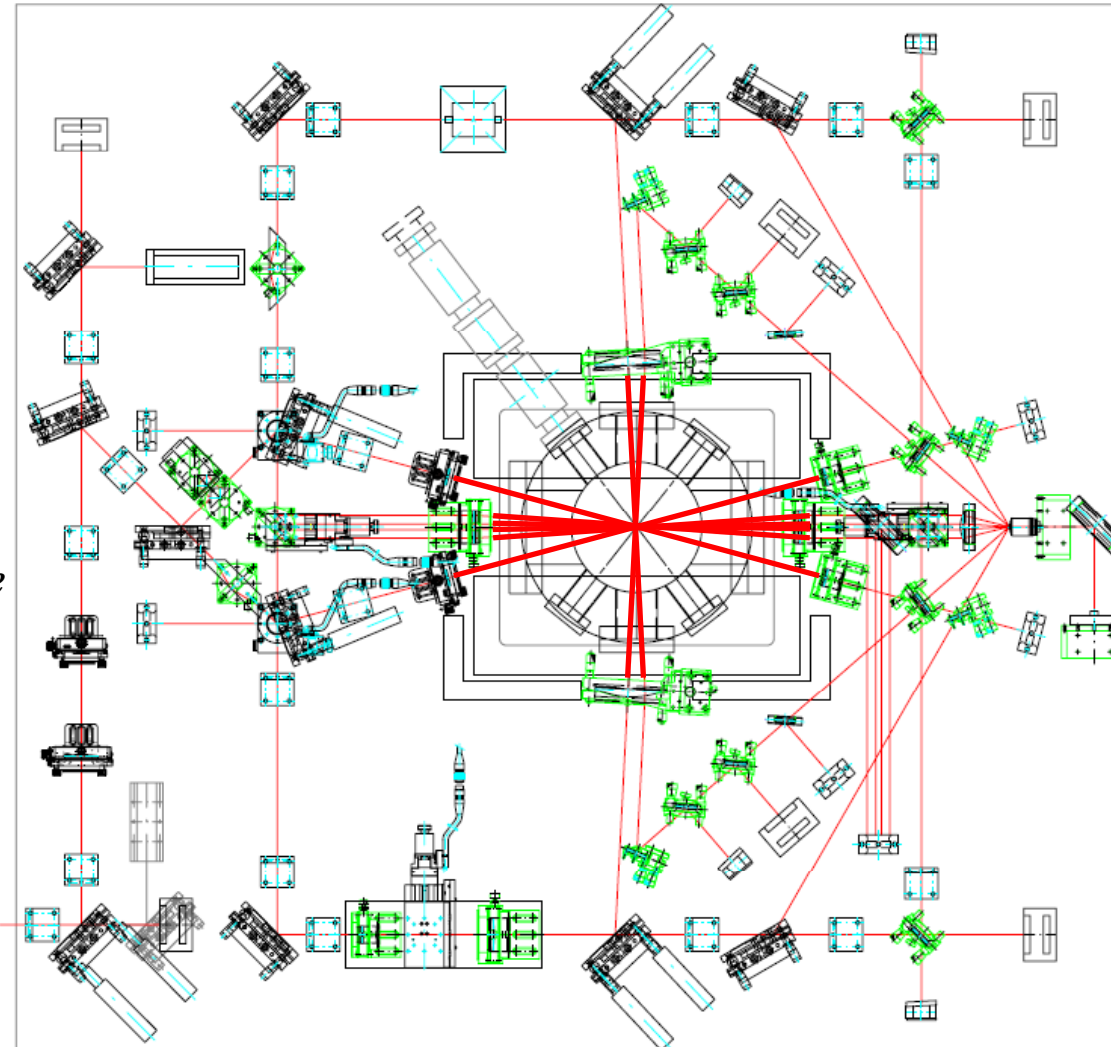
Layout of the Laser Table

2 degree mode

8 degree mode

30 degree mode

174 degree mode



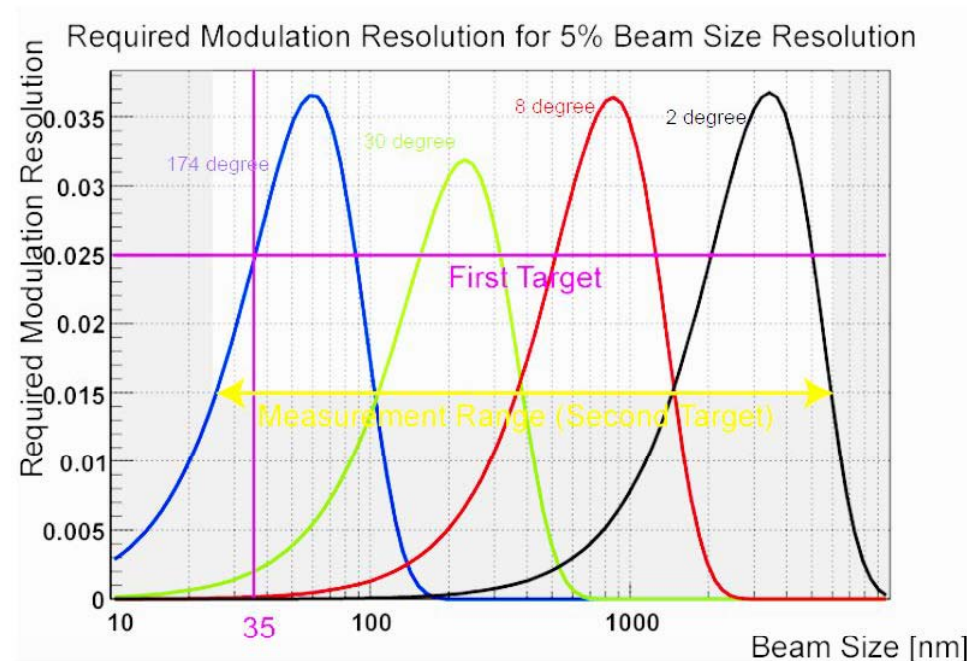
15 μ m pitch

3.8 μ m pitch

1.03 μ m pitch

266nm pitch

Dynamic Range of Shintake Monitor



By changing 4 laser collision angle, Shintake monitor can measure 25 – 6000 nm.

However, when we change the collision angle of Shintake monitor, we must change the laser path, and we must tune the laser path.

*Which collision angle should be selected for the beam tuning ?
We should be communicated with the Shintake monitor group*