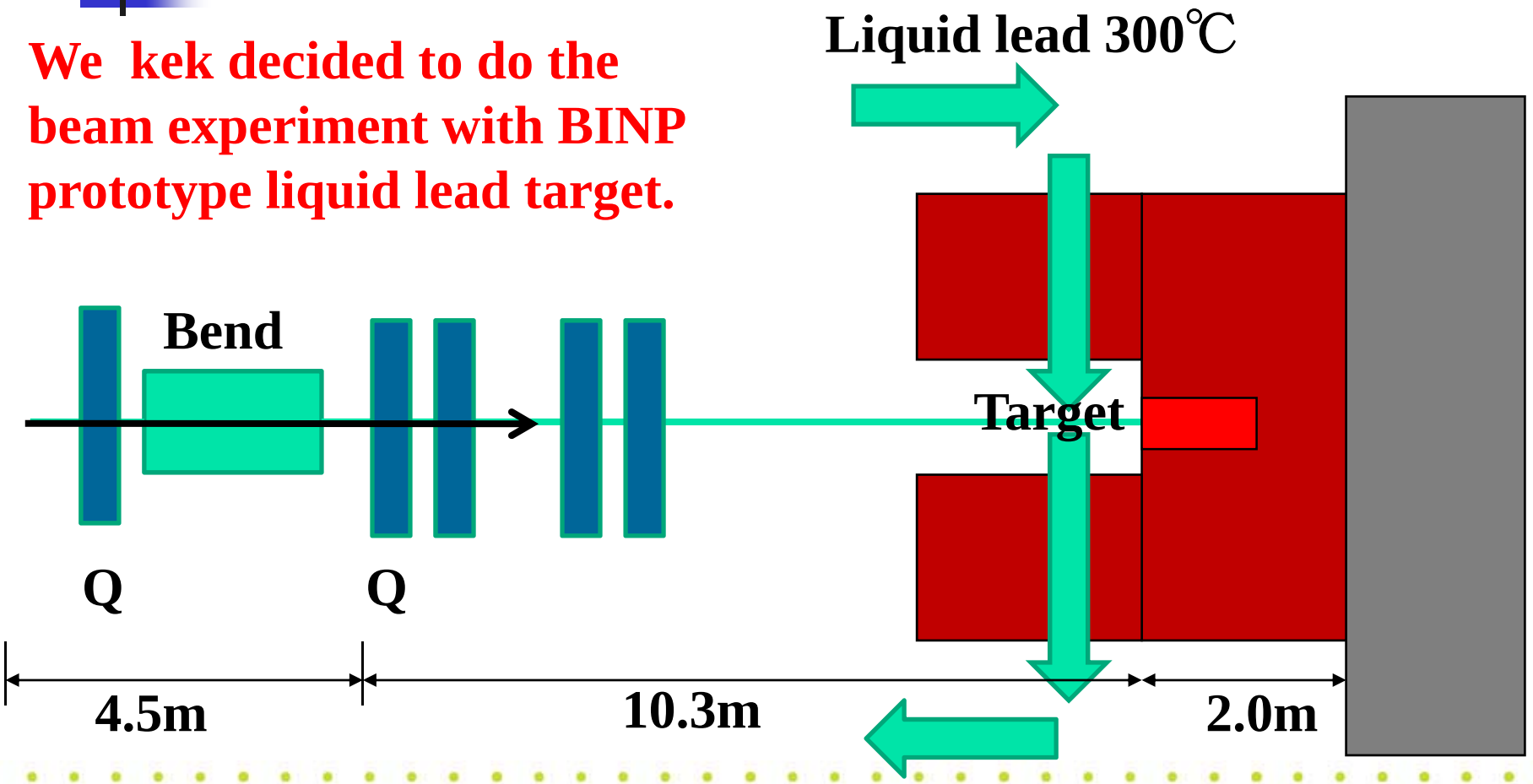
Liquid lead target test

at ATF Linac End

We kek decided to do the beam experiment with BINP prototype liquid lead target.

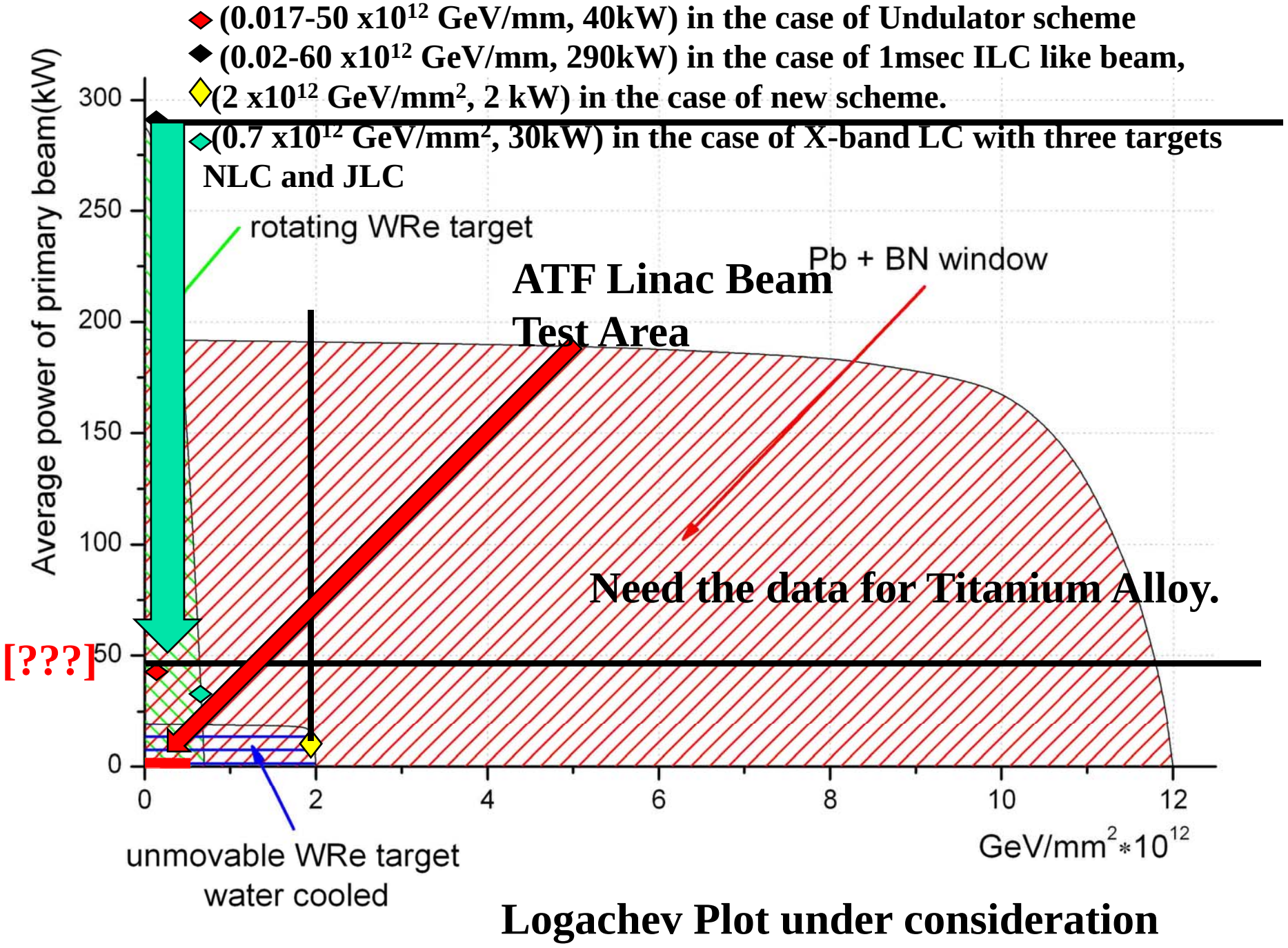


ATF Linac Beam Parameters

β function tuning range : 0.1m to 10m
Bunch structure : 1 to 20 bunches/train
Bunch charge : 0.5 to 2.0 x 10^{10} electrons/bunch
Beam energy : 1.3GeV
Repetition rate : 0.7 to 6.25Hz
Usual normalized emittance : 10πmmmrad
Beam size : 0.2 to 2.0mm

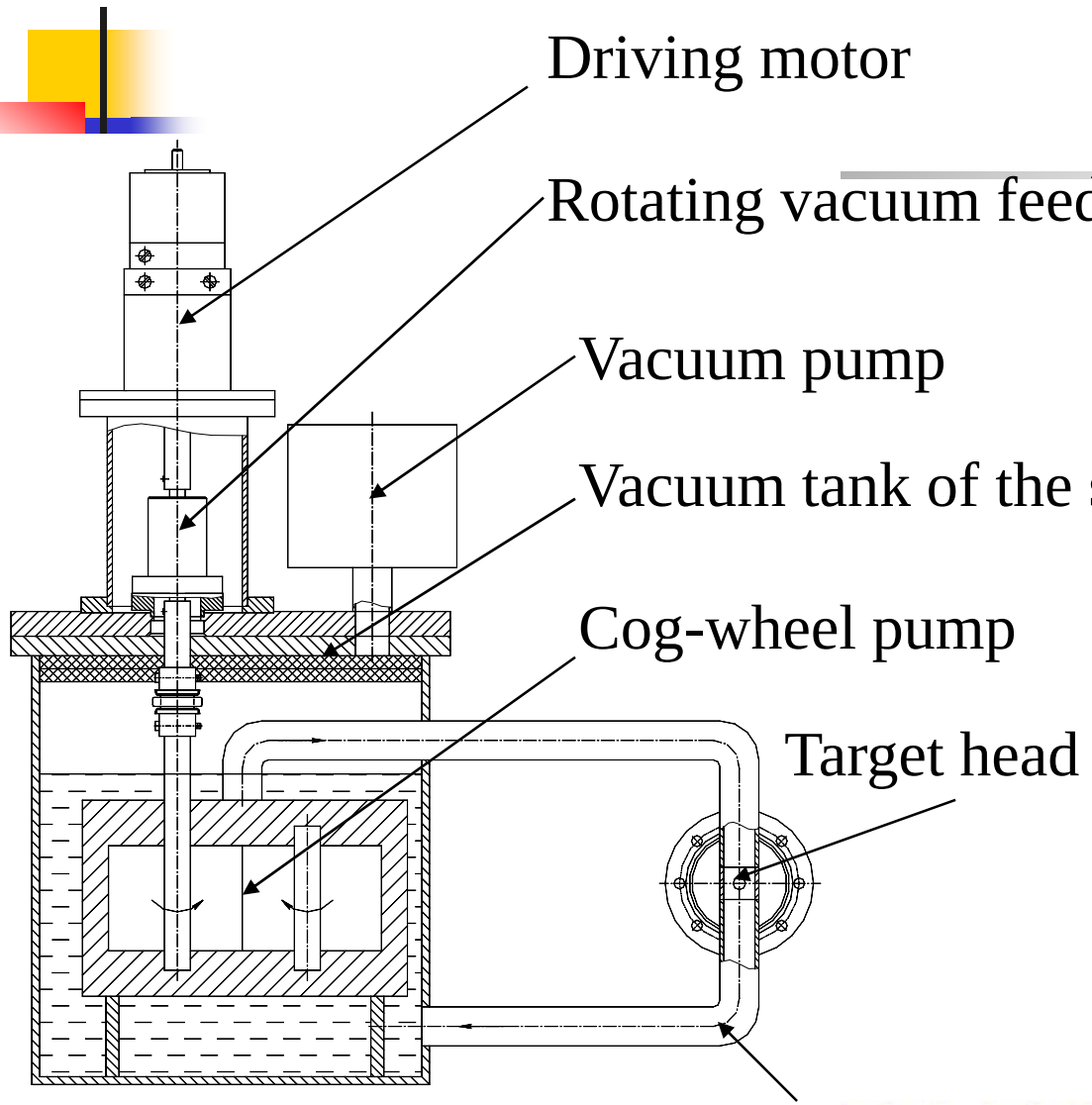
Energy density on target
0.006 to 48 x 10^{10} GeV/mm^2
Power deposit on target
0.004 to 300 x 10^{10} GeV/mm^2 s
Acceptable beam rep. rate?

What is meaningful beam experiments for ILC liquid target?
This is under discussion.

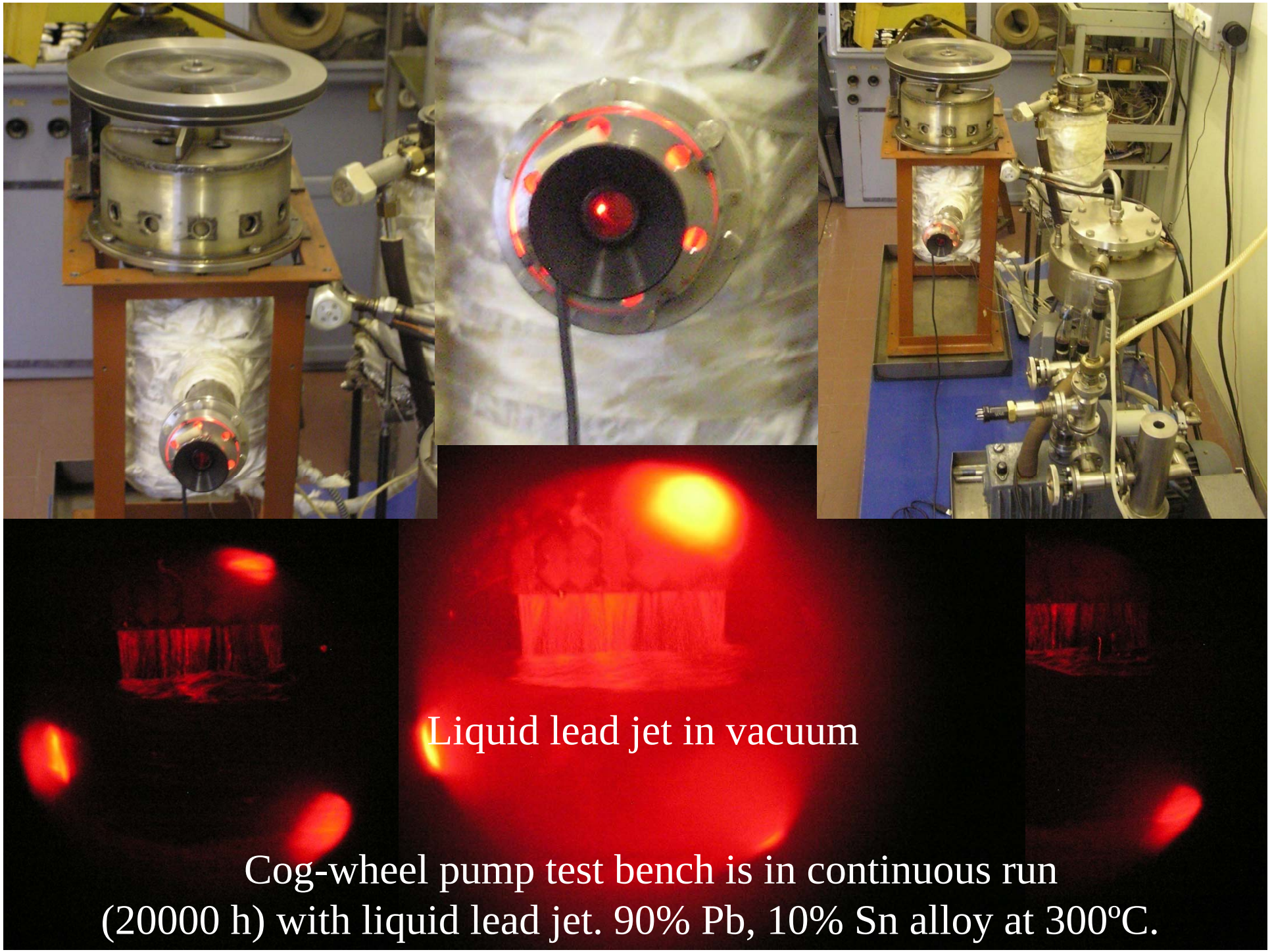


Logachev Plot under consideration

Scheme of the prototype of liquid lead positron production target.



Window thickness 4mm
BN disks for windows
Diameter 12mm



Cog-wheel pump test bench is in continuous run
(20000 h) with liquid lead jet. 90% Pb, 10% Sn alloy at 300ºC.

Summary

Systematic experimental studies on Liquid 90%Pb+ 10%Sn target system with BN window will start from late 2009.

We are still discussing what kind of measurements are necessary for ILC target system and detail schedule.

To learn the operation of this liquid target is important for the evaluation of the reliability and the maintainability and we can propose very reliable target system for ILC e+ source with a lot of simulation and some proofs of experimental results.