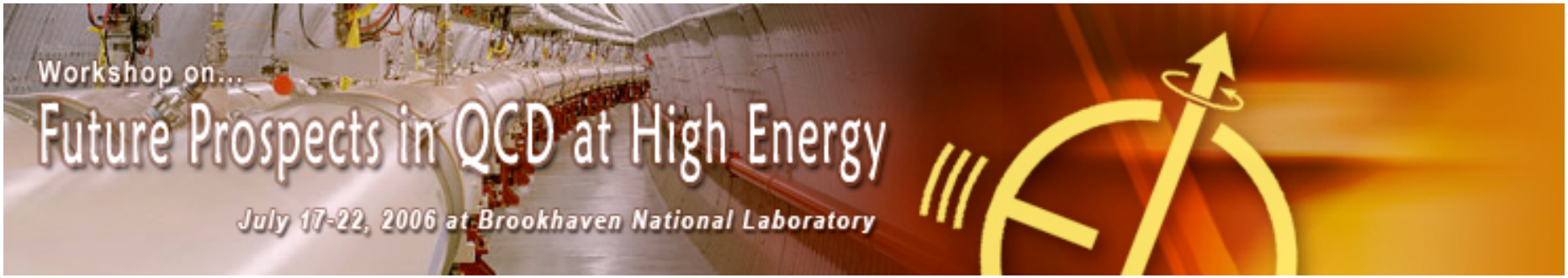


Some thoughts some questions…

Personal Perspective

Constructive criticism and comments welcome

Abhay Deshpande

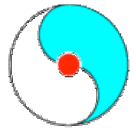
July 22, 2006

STONY BROOK
STATE UNIVERSITY OF NEW YORK

What next?

Long Range Planning: Town Meetings Start January 2007

Need a coherent strategy to approach this very important step



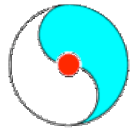
Are Physics cases well developed?

- Nucleon structure
- QCD at Zero temperature
- QCD at high temperature
- Detector Ideas and R&D

Science First!

Which aspects need more attention?

Need to continue working in working groups?



Most important message I heard:

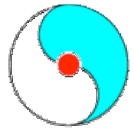
QCD community should

make the case for <u>our future</u> together:

Nucleon Structure including spin
Zero temperature QCD
High Temperature QCD
Lattice QCD

} **Experiments + Theory**

Need strong support of and in return support the accelerator technology development: for near and far term future of this field



Accelerator issues

Short term and long term beam development crucial in any future machine issues, and should not be under-estimated

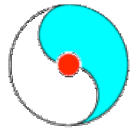
RHIC II needs the beam cooling

eRHIC [ring-ring] design needs many more bunches than presently possible

Much needed R&D on the Linac-Ring eRHIC

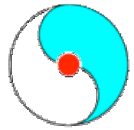
and various aspects of the eLIC collider design

Continuous effort towards all these goals need to go on



A desirable outcome from LRP…

- Existing facilities should be run at their full capabilities
- The EIC needs be the highest priority construction project in Nuclear Physics, after the completion of Jlab 12 GeV upgrade
- Although not explicitly stated, this assumes that the luminosity upgrade of RHIC occurs before EIC construction goes ahead….
  - Consistent with BNL's present plan and thinking



One path forward….

(Discussed on July 18, 2006 end of Plenary Session)

- Minimize the cost of the **ring-ring** design at RHIC and go forward with **EIC=eRHIC**, with the physics program (LRP 2002 White Paper) that corresponds to the ~10^33 /cm2/sec luminosity
  - Low-x program a la Caldwell et al, could happen early on in this scenario (one option)

- Continue aggressive and joint R&D effort between Jlab and BNL on the ERL technology & Jlab eLIC design

- When the ERL technology/Jlab eLIC is ready to go forward, and when we crystallize the physics goals and case for the higher luminosity collider (>10^{34}), *presumably after some early results from Jlab12*, propose the upgrade of EIC: that could be at BNL or at Jlab.
  - Second opportunity for Caldwell's detector (long element free region in LINAC-Ring design)