

Dec. 6, 2004

## RHLC Spin Plan Discussion

- charge → document to DOE Jan. 31, 2005
  - committee and RHLC Spin Collaboration
  - proposed schedule
  - proposed outline of document
  - what do we need to know?
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### Committee:

STAR: Les Bland, Bernd Surrow, Steve Vigdor

Phoenix: Matthias Perdekamp, Naohito Saito,  
Yuji Goto

Theory: Werner Vogelsang

RHLC: Mei Bai, Wolfram Fischer

Chain: Gerry Bunce

# Charge

1. science, also context  
→ research plan

2. RHIC performance requirements

3. resources needed, timeline

4. impact of "constant effort" budget

↳ = 5 weeks physics/year (10/2 yrs.)

- 10 weeks " "

→ really about 500 GeV plan

→ opportunity to revisit spin plan,  
emphasize work so far,  
develop plan beyond  $\gamma + W$ !

→ opportunity to think about beyond  
the baseline

→ 1<sup>st</sup> step toward new Nuclear Physics  
Long Range Plan

# The RHIC Spin Plan Group and the RHIC Spin Collaboration

- the Spin Plan Group is responsible for generating the document
- RSC is responsible to develop the plan
- both must contribute to both for this to be successful.
- "authors" will include everyone who made an important contribution
- the Phoenix and Star collaborations are represented by Deputy Spokespersons and will also "weigh in"
  - see schedule
- all information, meeting schedules, notes, drafts on spin discussion page.

## Proposed Schedule

- ✓ Dec. 2 - telephone meeting
- Dec. 6 - collaboration meeting
- Dec 6-17 - homework on major issues
- Dec. 17 - discuss major issues (telephone)  
- machine expectations  
- Phoenix and Star timelines for W hardware  
→ strawman spin plan
- Dec. 18 - Jan. 6 - write 1<sup>st</sup> draft
- Jan. 7 - discuss 1<sup>st</sup> draft (telephone)
- Jan. 8-13 - write 2<sup>nd</sup> draft
- Jan. 14 - discuss 2<sup>nd</sup> draft (collaboration meeting)  
→ circulate 2<sup>nd</sup> draft to Phoenix, Star collaborations
- Jan. 20 - complete document (telephone)  
→ circulate to lab management, informally to DOE (?)
- Jan. 27 - discuss any recommended changes  
→ final document.

# RHIC Spin Plan Outline

Time scale: thru W

## Executive summary

### Case for RHIC Spin

- all physics presented here,
- includes work so far
- longitudinal + transverse
- "baseline" and future programs
- complementarity / vs. DIS fixed target
- to eRHIC
- other spin physics at RHIC (elastic, ...)

## Accelerator

- present accomplishments + future
- expectations with 10, 5 week scenarios

## Experiments

- present accomplishments (hardware), required resources, upgrades, plan

## Spin Plan Schedule

- 10, 5 week plans

## Major Issues to Resolve

- ① What to expect for  $P, L$ ?
- ② Sensitivity goals for  $\Delta G/G, W$ ?  
- both theory and pragmatism!
- ③ Sensitivity goals for transverse spin?
- ④ Experiments - required hardware;  
revisit sensitivities; where do proposed  
upgrades fit in to plan? Can we  
handle highest  $L$ ?
- ⑤ Physics beyond the baseline!  
-  $\Delta z/z$ ; fragmentation; searches  $P, CP$ ;  
 $W + \text{charm}$  (present + future programs)

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Not an "issue", but how can we concisely  
(elegantly) present sensitivities for different  
probes - for example  $A_U(\pi^0, \text{jet}), \gamma, \gamma + \text{jet}$ ;  
different  $\eta$  coverages;  $\sqrt{s} = 200, 500$ ?