

RUN 12 RHIC MACHINE/EXPERIMENTS MEETING

18 October 2011 (1st meeting)

Agenda:

- Schedule issues (Pile)
- Machine Status (Fischer)
- STAR Readiness
- PHENIX Readiness

Recommendations following the June 6-8, 2011 PAC

For Run 12 the PAC recommends the following (*in order of priority*):

- 5 weeks of running with polarized proton collisions at 200 GeV.
- 7 weeks of running with polarized proton collisions at 500 GeV.
- 5 weeks of running with Cu+Au collisions at 200 GeV.
- 3 weeks of running with U+U collisions at 193 GeV.

For Run13 the PAC recommends the following (*not* in order of priority):

- 12 weeks of running with polarized proton collisions at 500 GeV.
- 5 week of running with polarized proton collisions at 200 GeV.
- 7 weeks of running with Au+Au collisions at full energy.

Run 12 Plan based on PAC recommendation/ALD Guidance and 22 weeks cryo operation DRAFT-DRAFT

- 3 Jan, Begin cool-down to 4.5K
- 10 Jan, Cool-down to 4.5K complete in both rings begin $\sqrt{s} = 200$ GeV pp setup
- 17 Jan, begin 2 week ramp-up with 8 hrs/night for experiments
- 31 Jan, begin 5 weeks physics with further ramp-up
- 6 March, end 5 week $\sqrt{s} = 200$ GeV pp run, begin $\frac{1}{2}$ week setup for $\sqrt{s} = 500$ GeV pp
- 10 March, begin 1 week ramp-up to $\sqrt{s} = 500$ GeV with 8 hrs/night for experiments
- 17 March, begin 7 week pp physics run at $\sqrt{s} = 500$ GeV
- 5 May, end 7 week pp physics run at $\sqrt{s} = 500$ GeV

- **17.4 cryo-weeks to this point, schedule beyond this point to be determined**

If Uranium...

- 5 May, begin 1 week setup for $\sqrt{s} = 193$ GeV/n UU (no overnight stores for experiments)
- 12 May, begin 3 week $\sqrt{s} = 193$ GeV/n UU physics run
- 2 Jun, end 3 week $\sqrt{s} = 193$ GeV/n UU physics run
- 5 June, cryo warm-up complete (22.0 cryo-weeks)

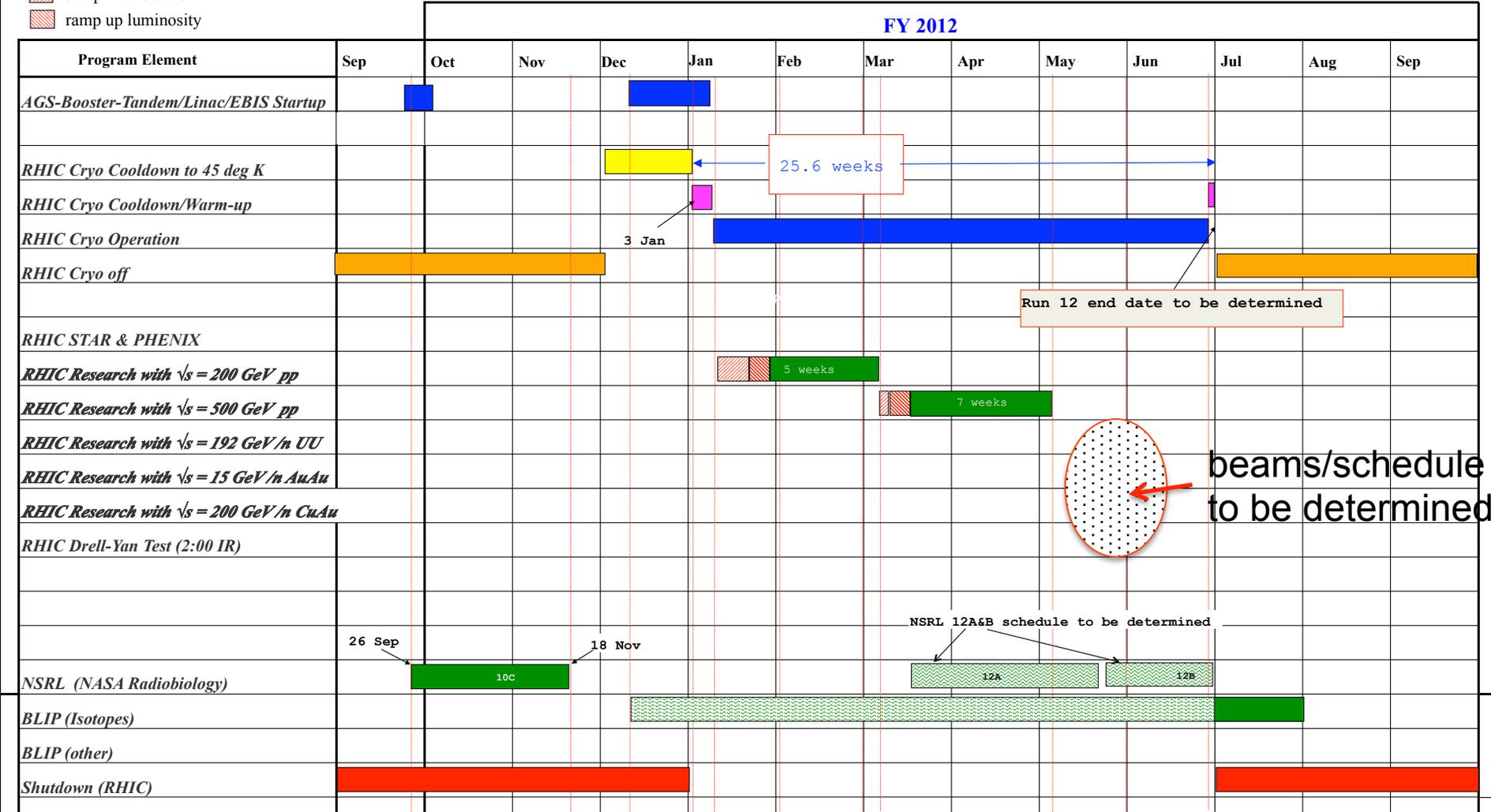
Consistent with Fischer et. al. "RHIC Collider Projections (FY 2012 – FY 2016)"

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C-A Operations-FY12

planned (budget permitting)

-  concurrent with RHIC
-  setup with beams
-  ramp up luminosity



Cryogenic System Cool-down Projection based on Full Compressor Power Starting on January 3, 2012

10/17/11 – D. Lederle

.5 to 1 MW – Nov 10, 2011 through Dec 4, 2011 (temporary peaks up to 2 MW)

Scrub of RHIC rings and cryo plant, 14 atm pressure test of blue sextants 2/3 and 8/9 M-lines. Main compressor testing and scrub.

2.8 MW – Dec 5, 2011 through Jan 2, 2012

12/05/11	Start 45K cool-down of cryo plant
12/06/11	Start 45K wave in both RHIC rings

6 to 8 MW – Jan 3, 2012 through Jan 8, 2012

01/02/12	First liquid helium delivery
01/03/12	Start 4K wave in Blue ring, Hi potting (3 days)
01/04/12	Second liquid helium delivery
01/05/12	Third liquid helium delivery
01/06/12	Estimate blue ring cold and stable, soak complete, ready for magnet powering.
01/06/12	Start 4K wave in Yellow ring, Hi potting (3 days)
01/07/12	Fourth liquid helium delivery
01/08/12	Estimate yellow ring cold and stable, soak complete, ready for magnet powering.

5 MW starting on Jan 8, 2012

01/08/12	Start T7 turbine
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Other Slides

From Fischer et. al. “RHIC Collider Projections (FY 2012 – FY 2016)”

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For example, 22 weeks of RHIC refrigerator operation in FY 2012 could be scheduled in the following way:

Cool-down from 50 K to 4 K	1 week	
Set-up mode 1 (p↑-p↑ at 100 GeV)	1 week	(no dedicated time for experiments)
Ramp-up mode 1	2 week	(8 h/night for experiments)
Data taking mode 1 with further ramp-up	5 weeks	
Set-up mode 2 (p↑-p↑ at 250 GeV)	½ week	(no dedicated time for experiments)
Ramp-up mode 2	1 week	(8 h/night for experiments)
Data taking mode 2 with further ramp-up	7 weeks	
Set-up mode 3 (U-U at 100 GeV/nucleon)	1 week	(no dedicated time for experiments)
Data taking mode 3 with further ramp-up	3 weeks	
Warm-up	½ week	

Run 12 projection for $\sqrt{s} = 200$ GeV pp

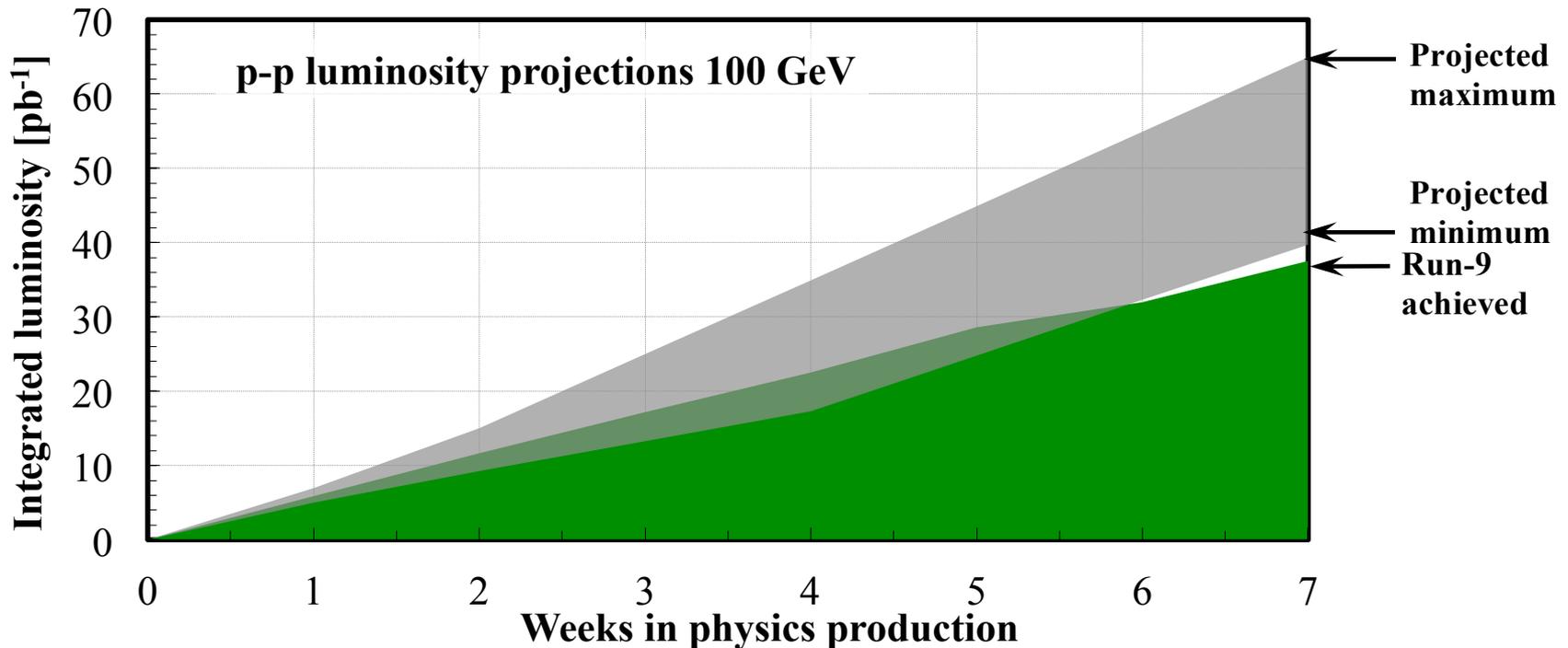


Figure 3: Projected minimum and maximum integrated luminosities for polarized proton collisions at 100 GeV beam energy, assuming a linear weekly luminosity ramp-up in 4 weeks. An average store polarization between 50 and 60% is expected.

From Fischer et. Al. "RHIC Collider Projections (FY 2012 – FY 2016)"

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Run 12 projection for $\sqrt{s} = 500$ GeV pp

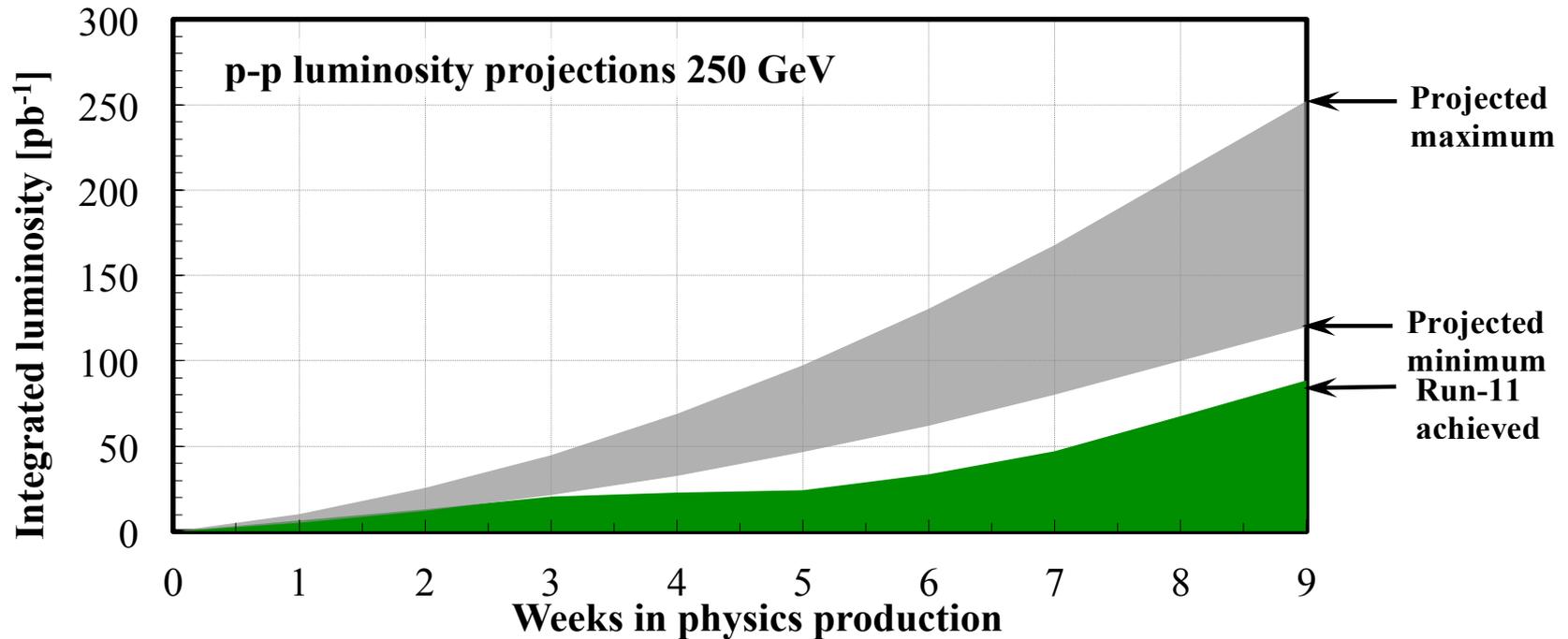


Figure 4: Projected minimum and maximum integrated luminosities for polarized proton collisions at 250 GeV beam energy, assuming linear weekly luminosity ramp-up in 8 weeks. An average store polarization between 45 and 50% is expected.

From Fischer et. Al. "RHIC Collider Projections (FY 2012 – FY 2016)"

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Run 12 projection for $\sqrt{s} = 193$ GeV/n UU

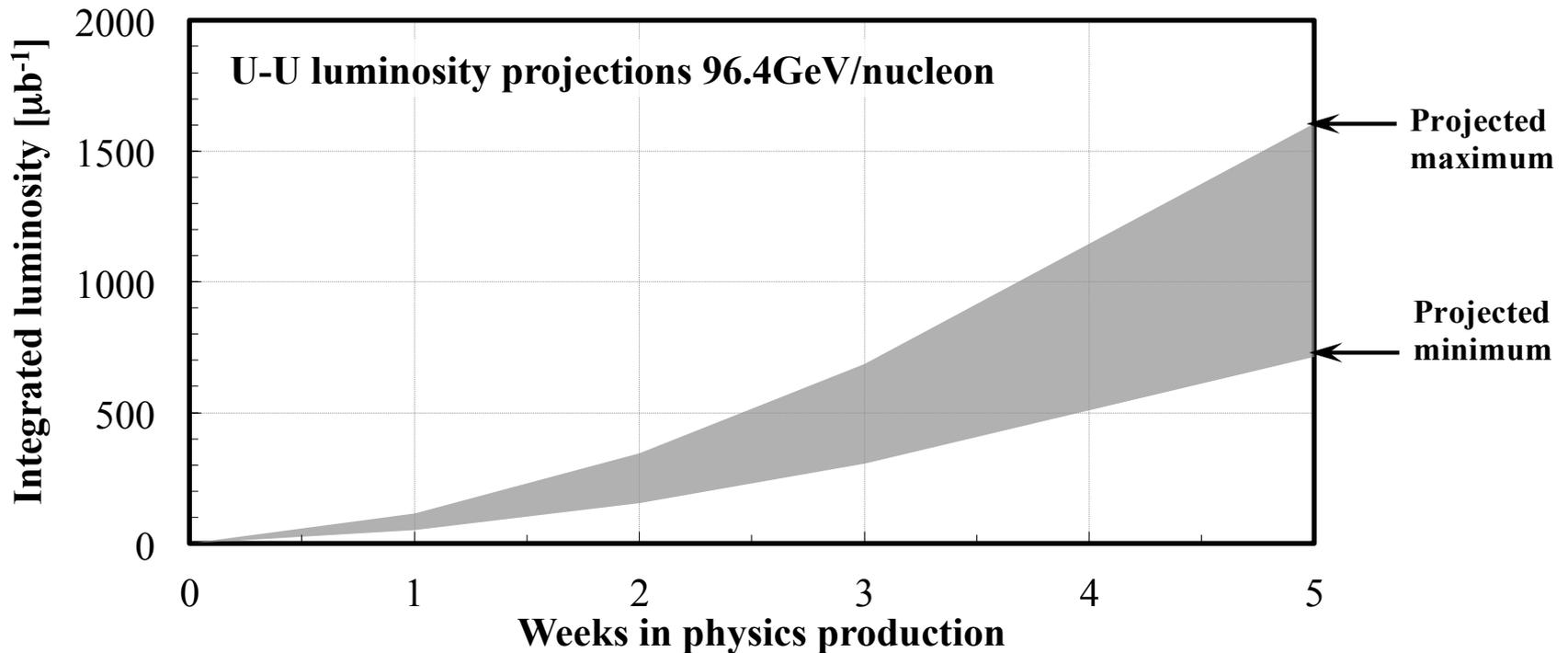


Figure 5: Projected minimum and maximum integrated luminosities for uranium-uranium at 96.4 GeV/nucleon, assuming linear weekly luminosity ramp-up in 48 weeks.

From Fischer et. Al. "RHIC Collider Projections (FY 2012 – FY 2016)"

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Run 12 projection for $\sqrt{s} = 200$ GeV/n CuAu

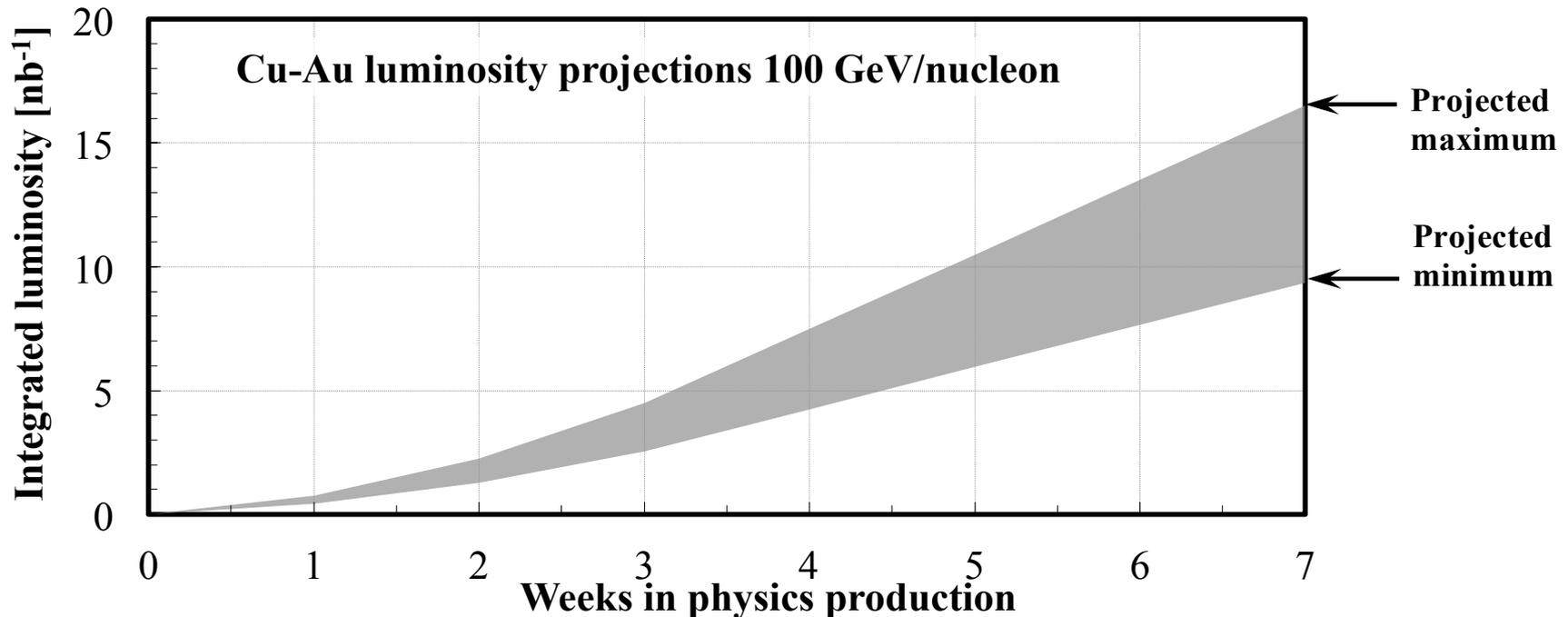


Figure 6: Projected minimum and maximum integrated luminosities for copper-gold collisions at 100 GeV/nucleon beam energy, assuming linear weekly luminosity ramp-up in 4 weeks.

From Fischer et. Al. "RHIC Collider Projections (FY 2012 – FY 2016)"

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