



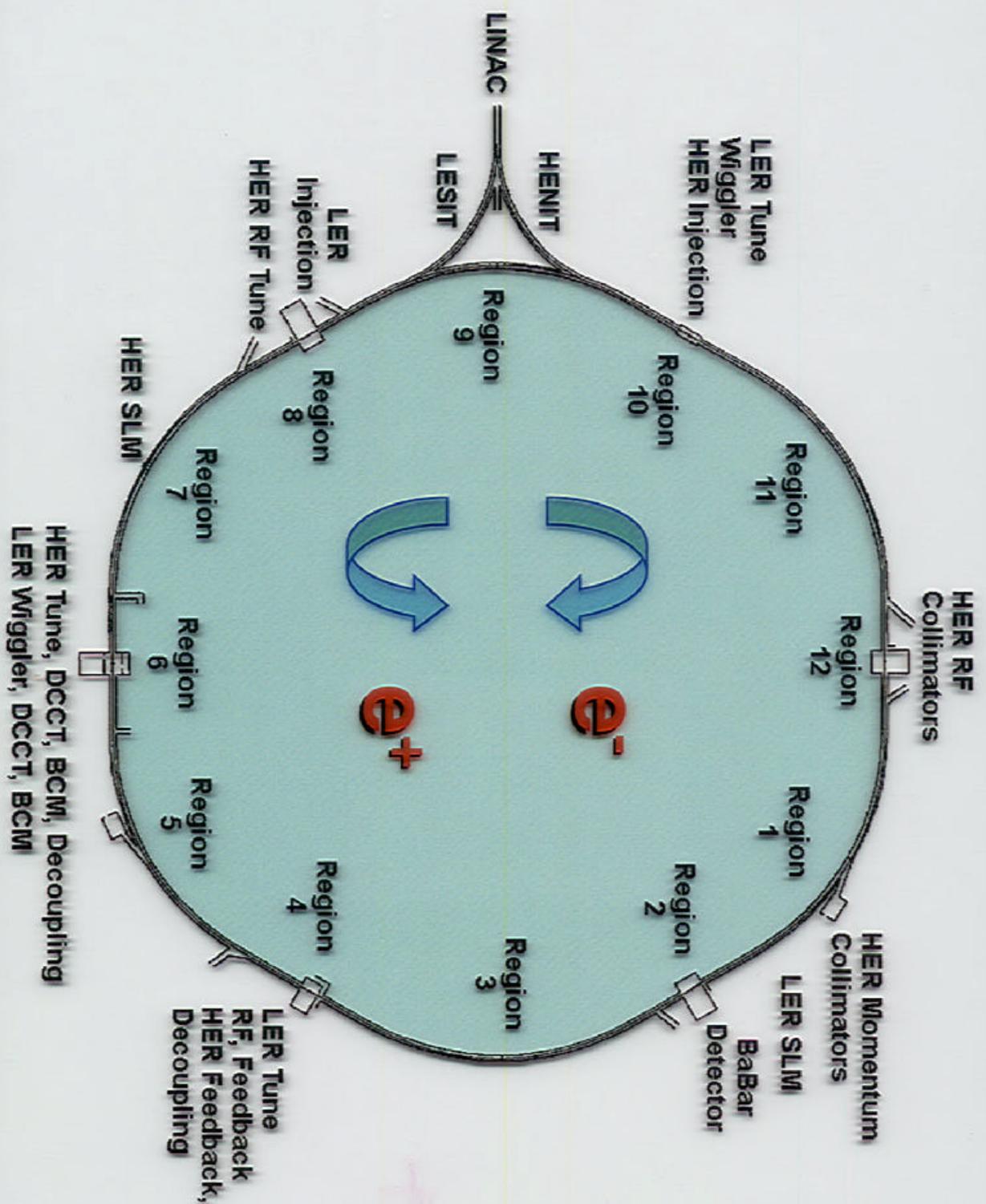
PEP-II Status and Plans

John T. Seeman

BCP4 Workshop

Kashikojima, Japan

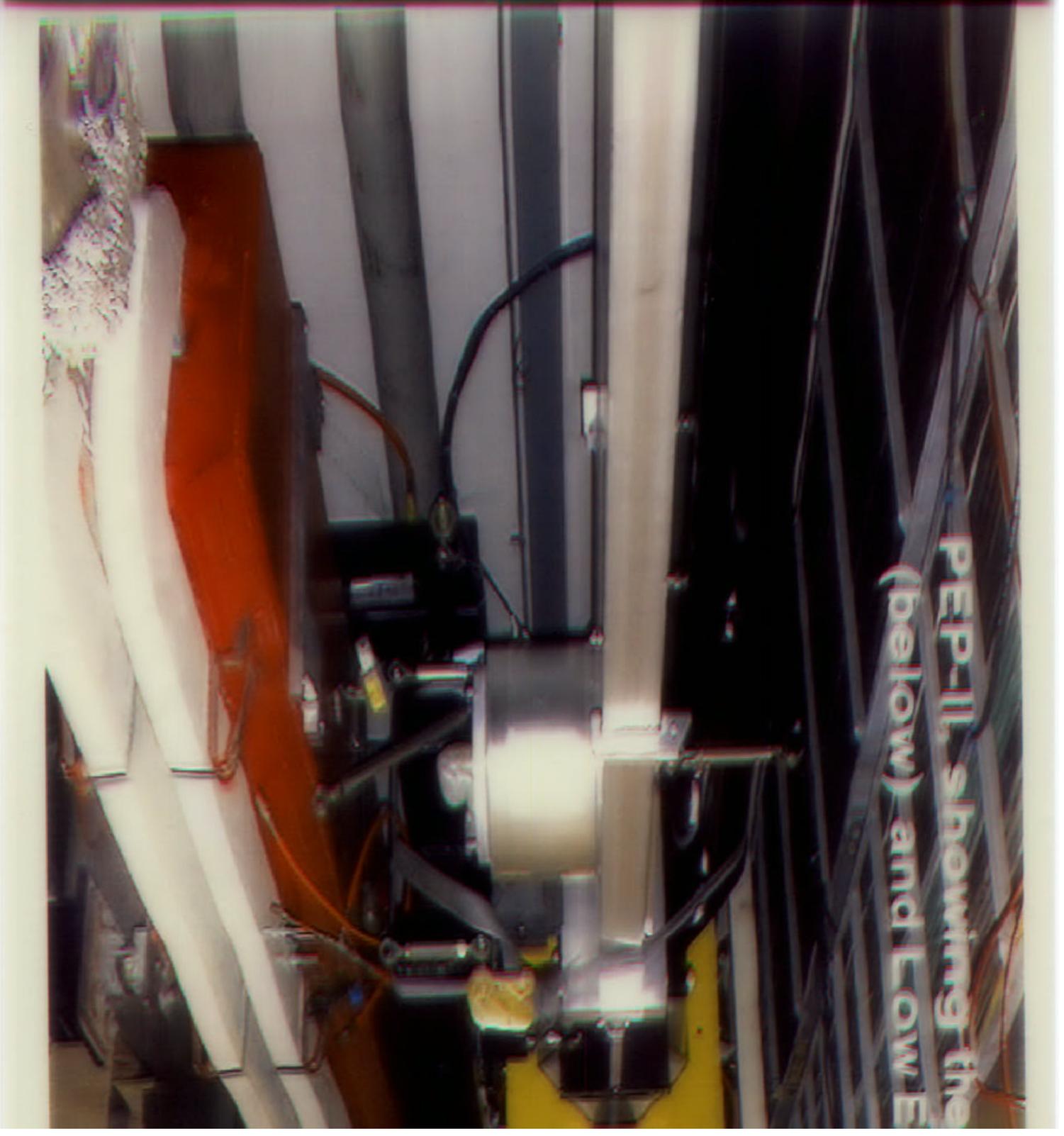
February 19, 2001





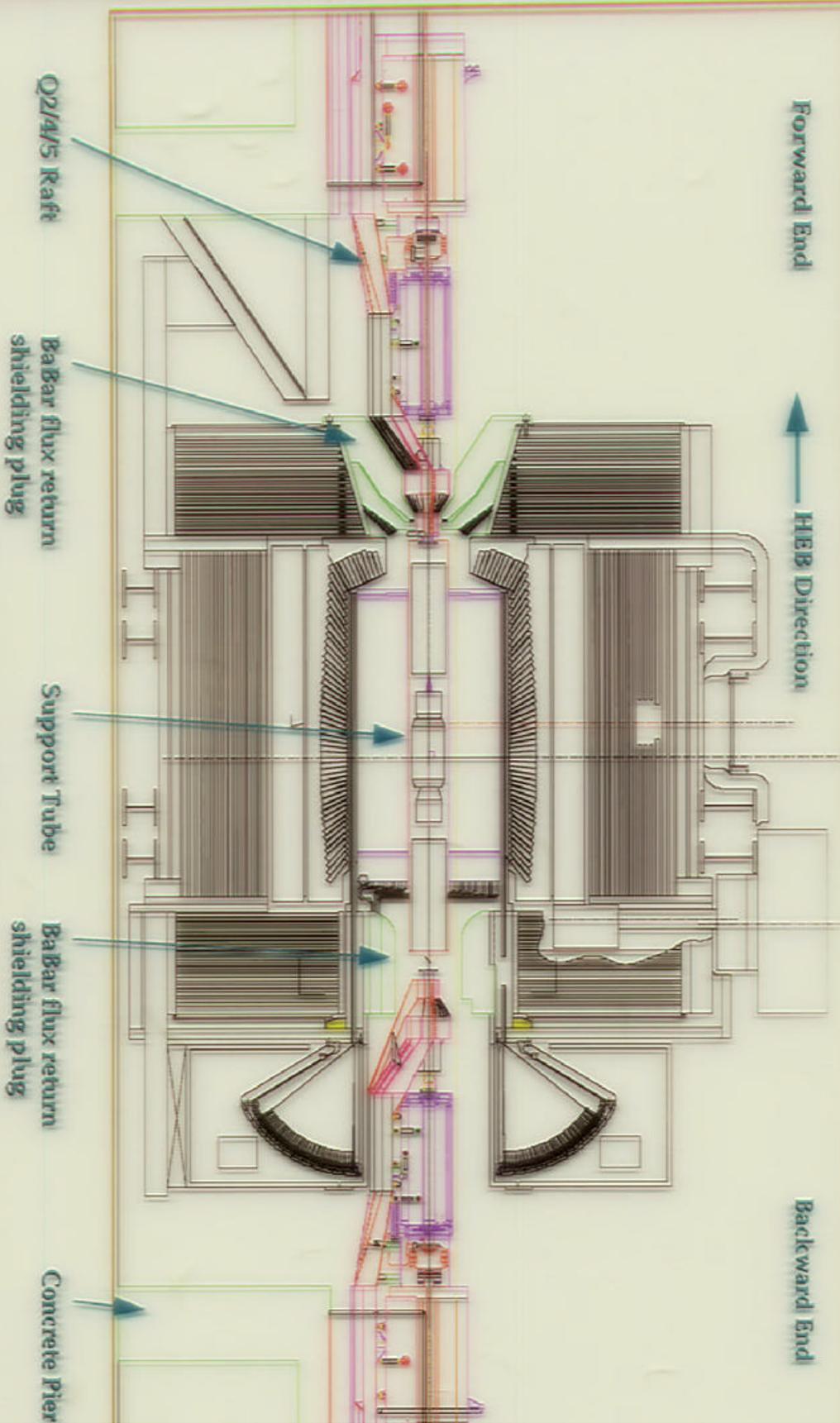
PEP-II Parameters

	e^+	e^-
CM energy (GeV)	10.580	
Beam energy (GeV)	3.119	8.973
Beam current (A)	2.15	0.75
$\beta_x^* \beta_y^*$ (cm)	50 1.5	50 1.5
$\epsilon_x \epsilon_y$ (nm)	49 1.5	49 1.5
σ_x^* (μm)	157	
σ_y^* (μm)	4.7	
σ_z (mm)	12.3	11.5
Luminosity	$3 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$	
Tune shift	0.03	
Beam aspect ratio (v / h at IP)	0.03	
Number of colliding bunches	1658	
Bunch spacing (m)	1.26	
Beam crossing angle	0 (head-on)	



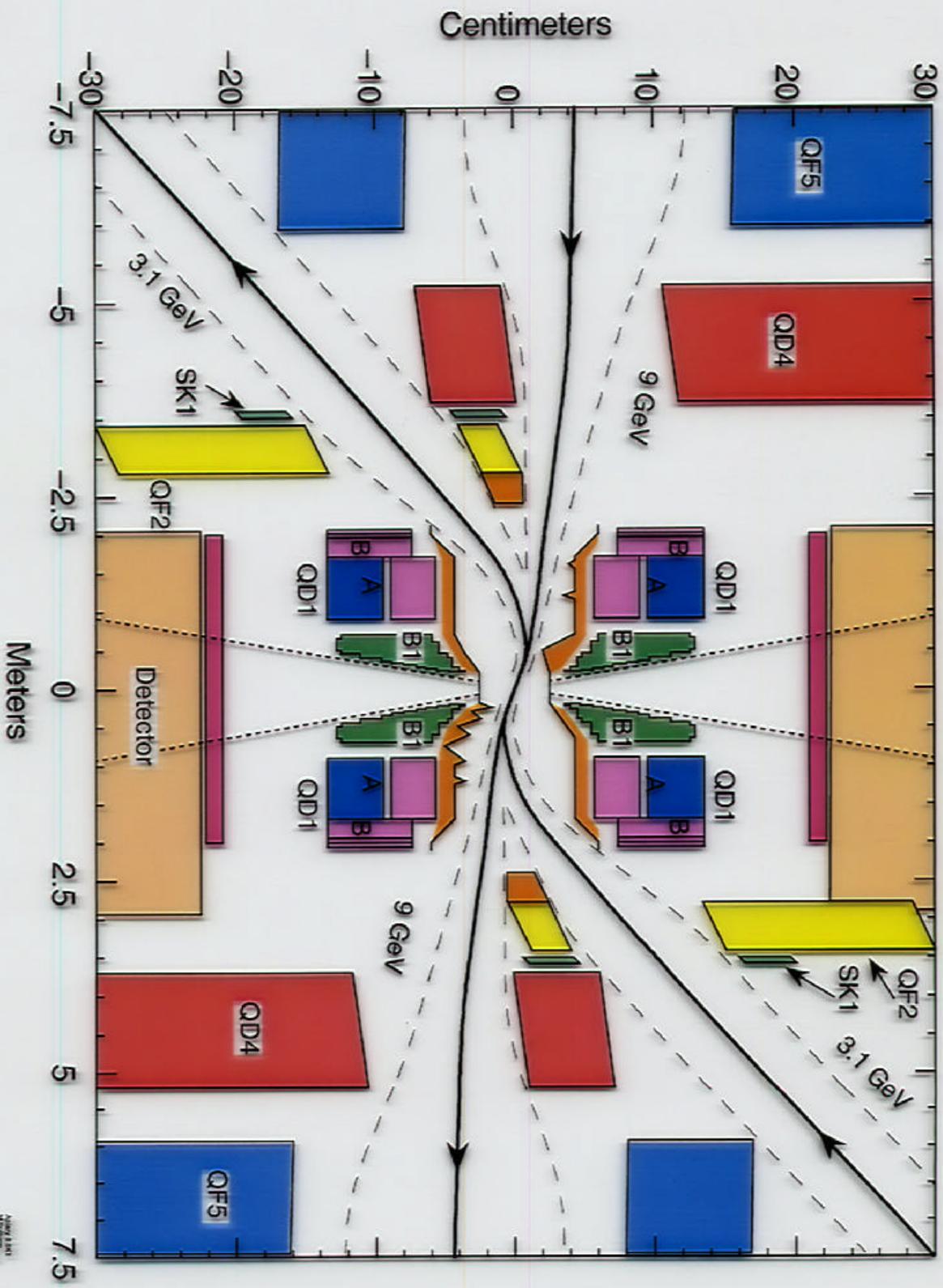
PEP-II, showing the (below) and Low E

PEP-III I.R. and BaBar Detector in IR-2



Elevation View of PEP-III I.R. and BaBar

PEP-II Interaction Region



PEP-II Commissioning Team

J. Seeman
U. Wienands

PEP-II Commissioning
PEP-II Run Coordinator

J. Seeman (Acting)
U. Wienands
R. Iverson
M. Sullivan

LER Commissioning
HER Commissioning
Injection Commissioning
Collisions

Regular Shift Takers - 23 total

SLAC:

Y. Cai
M. Donald
A. Fisher
A. Kulikov
I. Reichel
M. Sullivan

J. Clendenin
S. Ecklund
R. Iverson
M. Minty
J. Seeman
J. Turner

F.J. Decker
R. Erickson
P. Krejcik
J. Nelson
M. Stanek
U. Wienands

LBL:

C. Steier

M. Zisman

Saclay:

W. Kozanecki

Frascati:

M. Biagini

CERN:

M. Placidi

System Experts - Come in for specially scheduled activities

RF:

H. Schwarz

A. Hill

Transverse Feedback:

R. Akre
A. Young

Longitudinal FB:

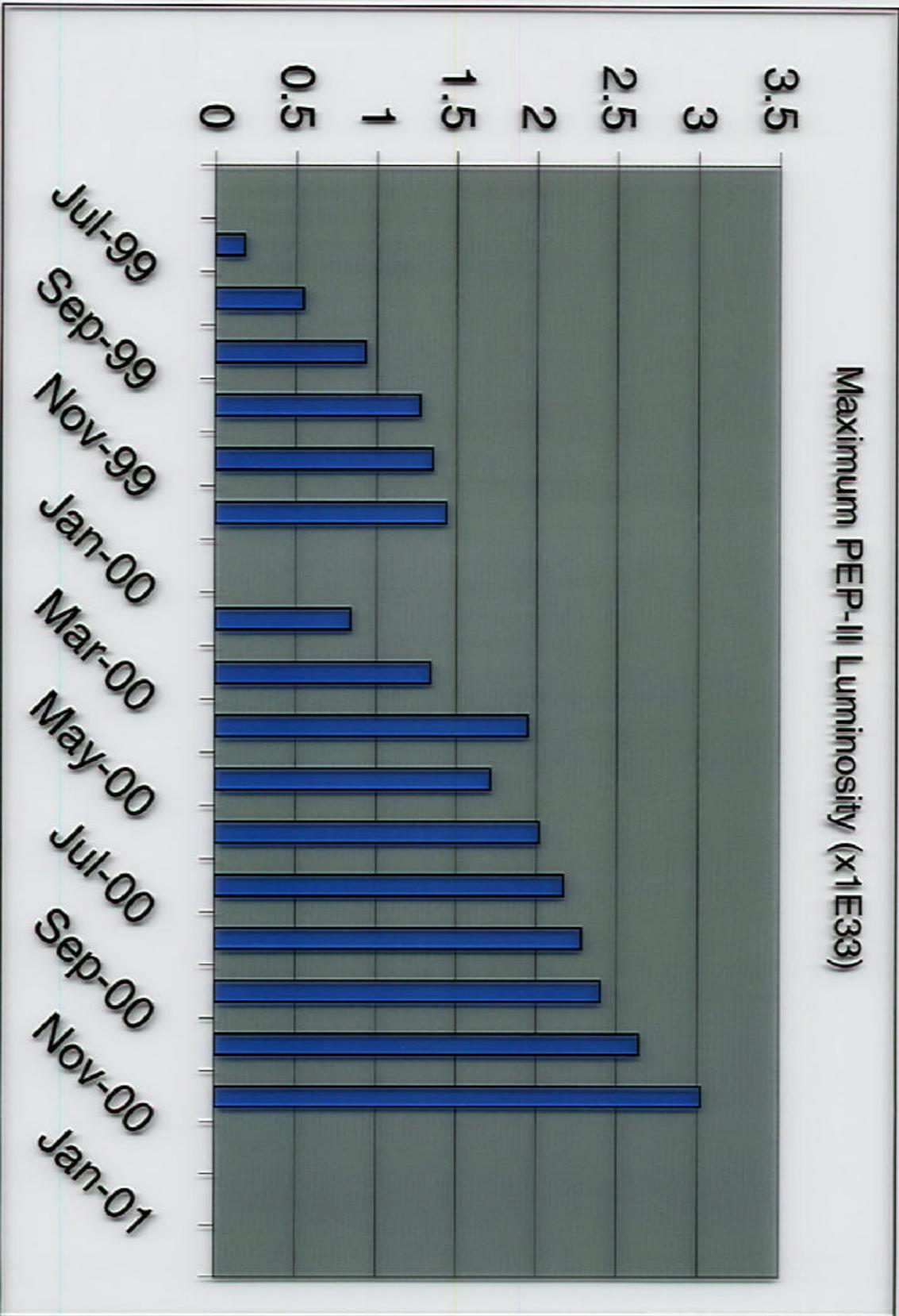
J. Fox
D. Teytelman

Accelerator Physics:

S. Heifets

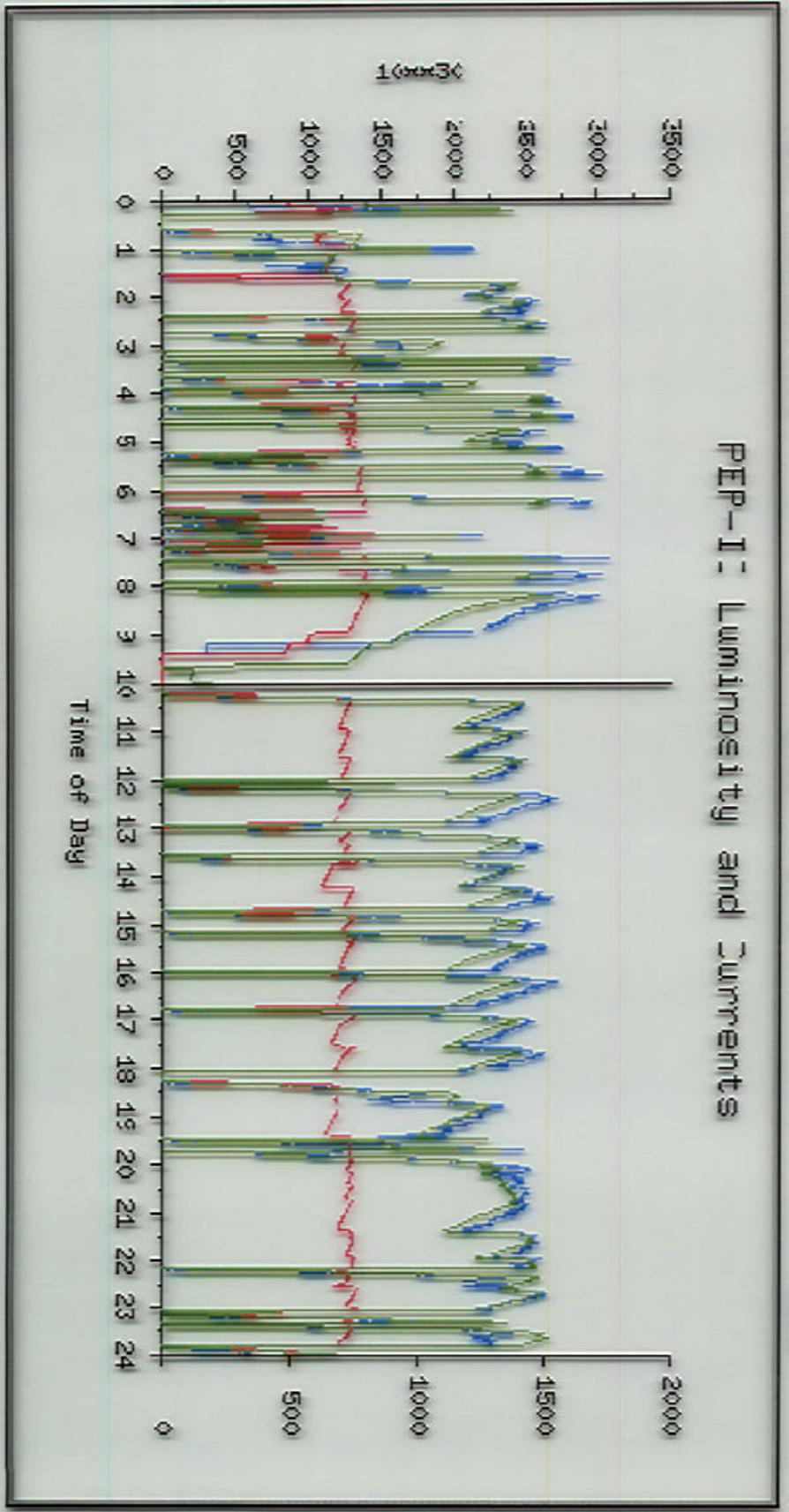
Y. Nosochkov

Maximum PEP-II Luminosity ($\times 10^{33}$)



I HER	I LER	Luminosity	Spec Lumi	E HER	E LER	E CM	
0.00	197.30	0	0.00	3983	3124	10595	
MA	MA	10**130/Sec	N*10**30 / MA**2/Sec	May	May	May	
HFR N Runkeys / Pattern							
6992 by3_trainings_of_101her							
-ast Owl/Day/Swing/24hr							
Peak Luminosities				0.9	45.8	28.8	75.4
				3100	2719	2777	3066
Shift: 8.04 /pb							

PEP-I: Luminosity and Currents



10/29/2000 10:00:25

3.1 × 10³³ PEP-II Luminosity Oct. 29, 2000 07:25



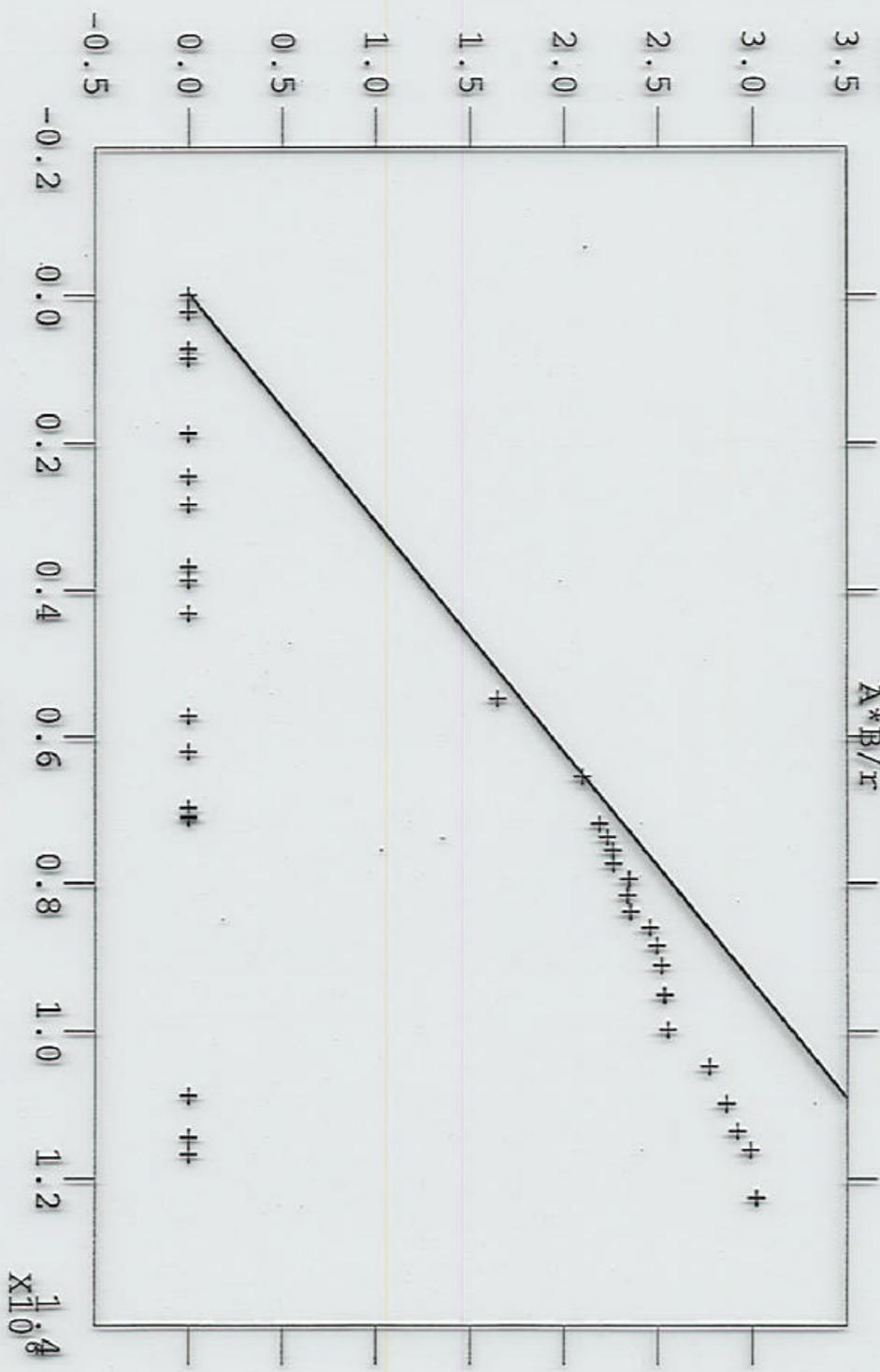
Oct. 29, 2000 07:50

C = PB60:LUMCOR:COLL 40 pts

X10³

HISTORY ARITHMETIC

A*B/ τ



X10⁴

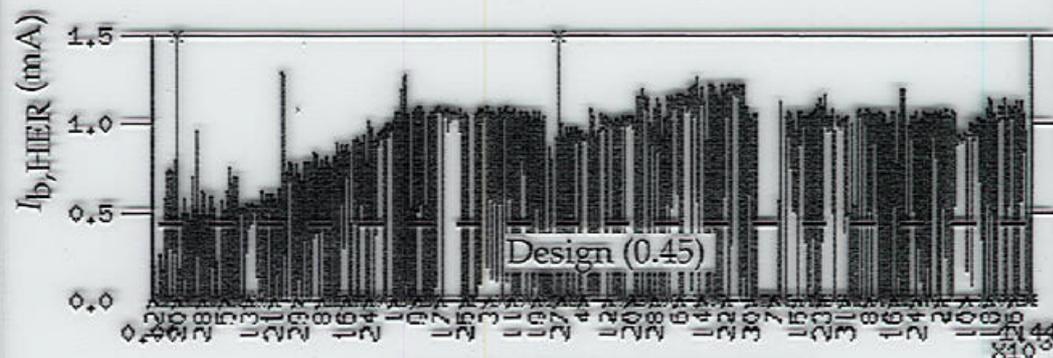
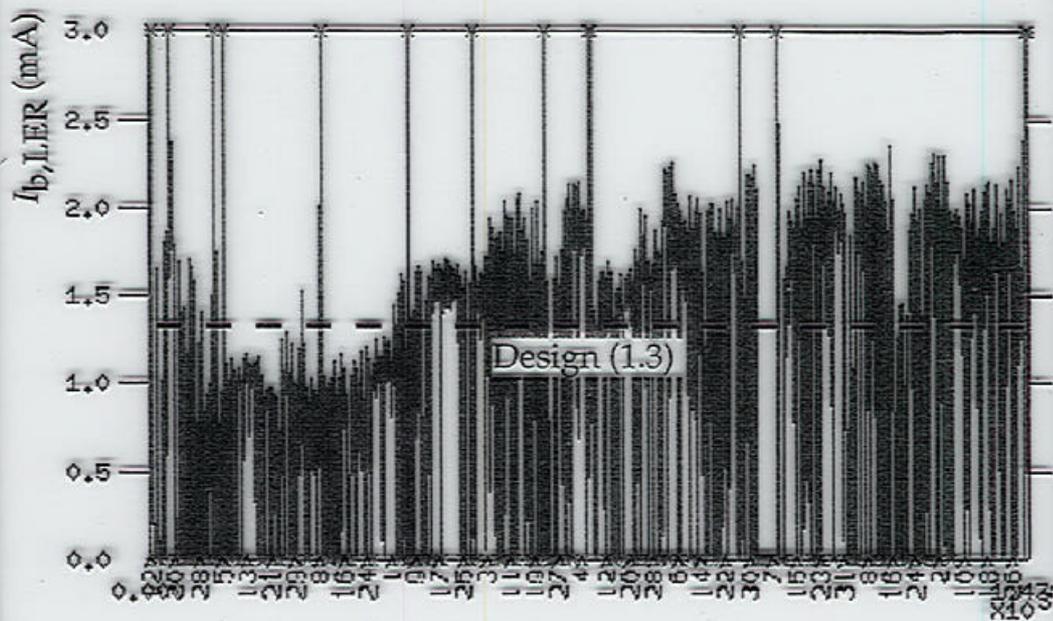
A = HB60:DCCCT:SUMY 40 pts
B = LB60:DCCCT:SUMY 40 pts
 $\tau = 1.000$
Time Range: 29-OCT-2000 08:01:55. - 29-OCT-2000 10:01:55.

29-OCT-00 10:01:57

PEP-II Luminosity Parameters

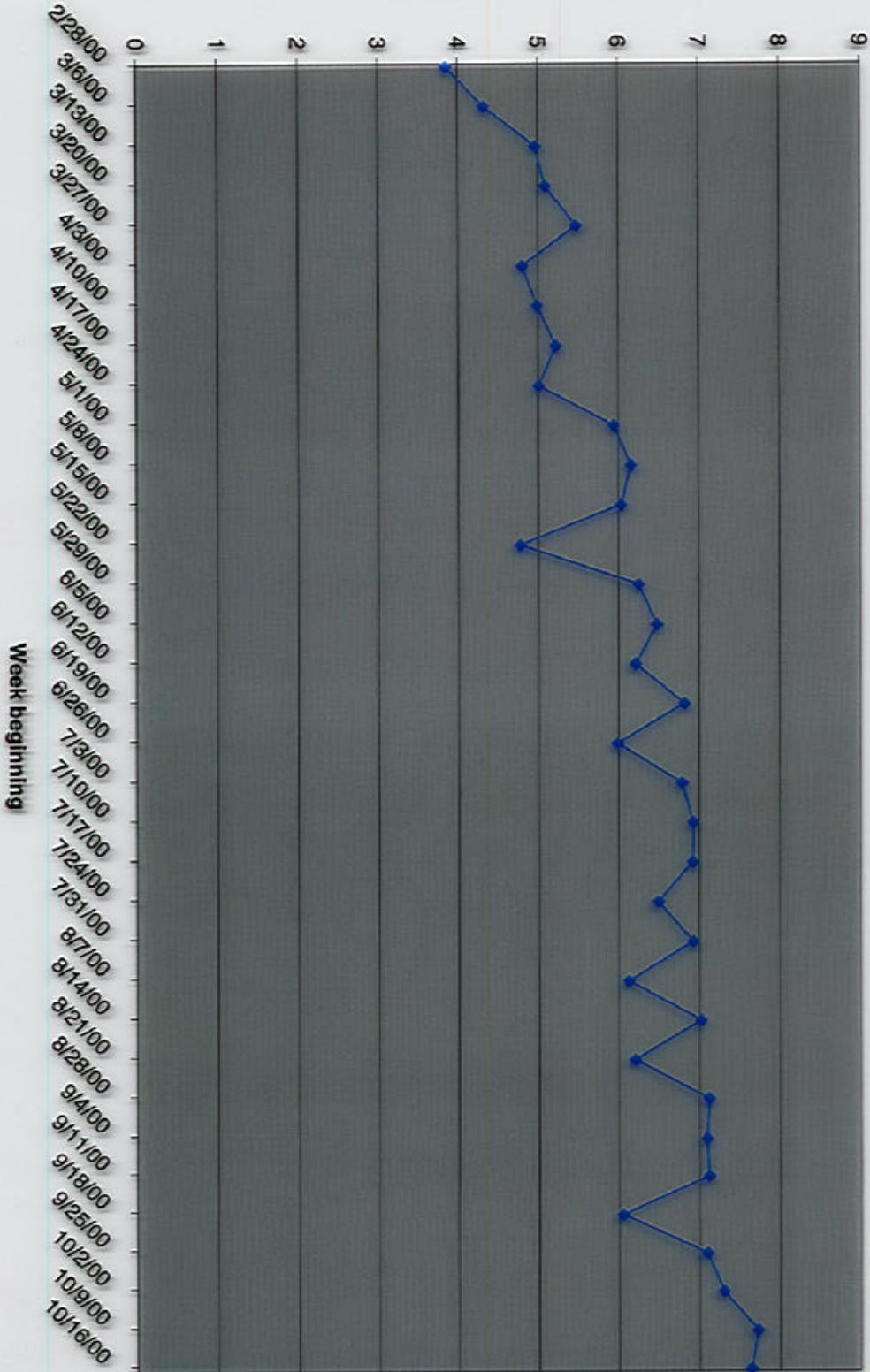
- Luminosity = 3.10×10^{33} /cm²/s
- Positron current = 1550 mA
- Electron current = 800 mA
- Number of bunches = 692
- IP beam sizes (ave) = 147 x 5 microns
- $\Sigma_{x,y} = 210 \mu\text{m}, 6.7 \mu\text{m}$ at low I
- Tune shifts:
 - Horizontal (e-,e+) 0.060, 0.069
 - Vertical (e-,e+): 0.028, 0.055

Bunch Currents

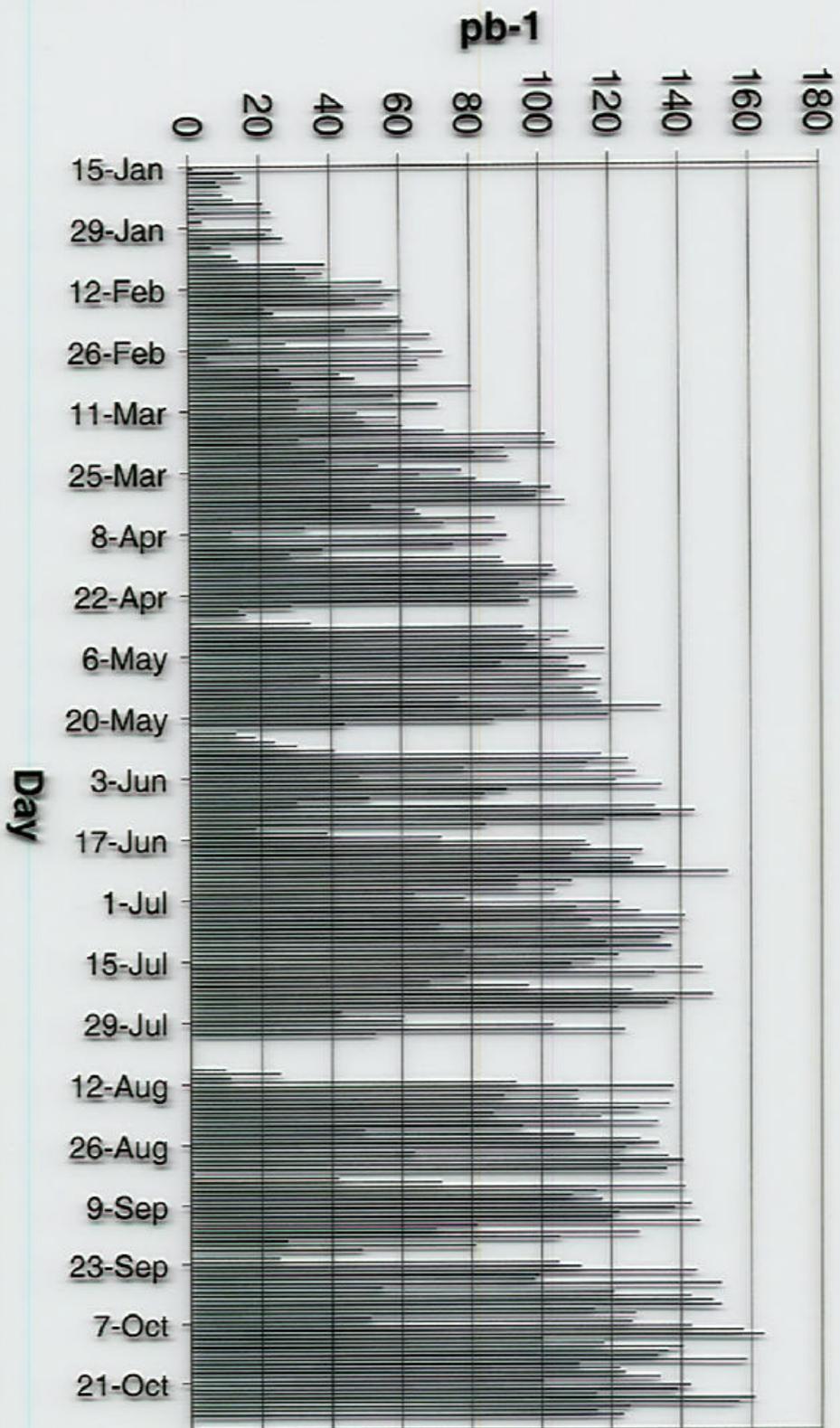


(11-Jan-2000...31-Oct-2000)

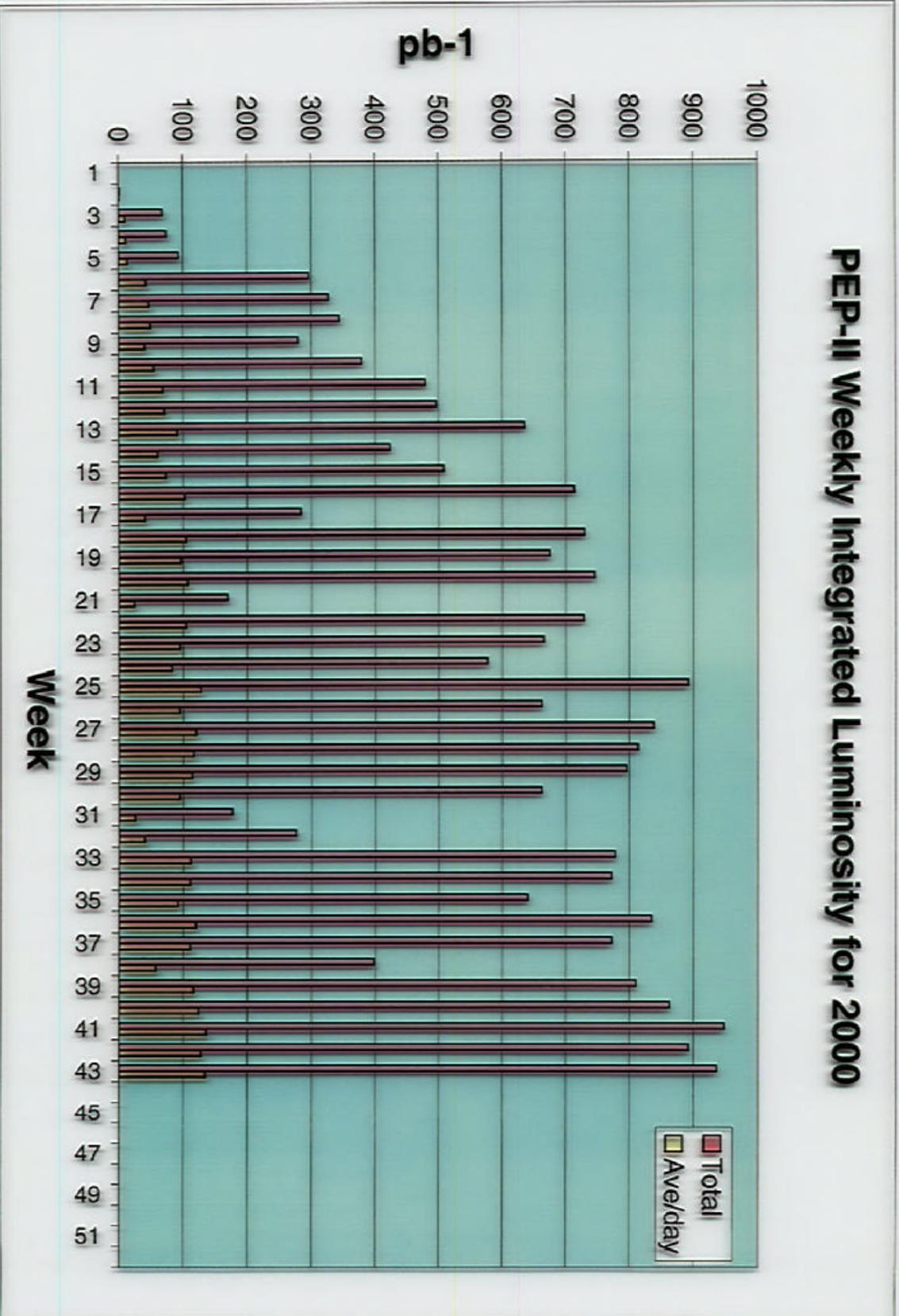
pb-1 per hour of Uptime



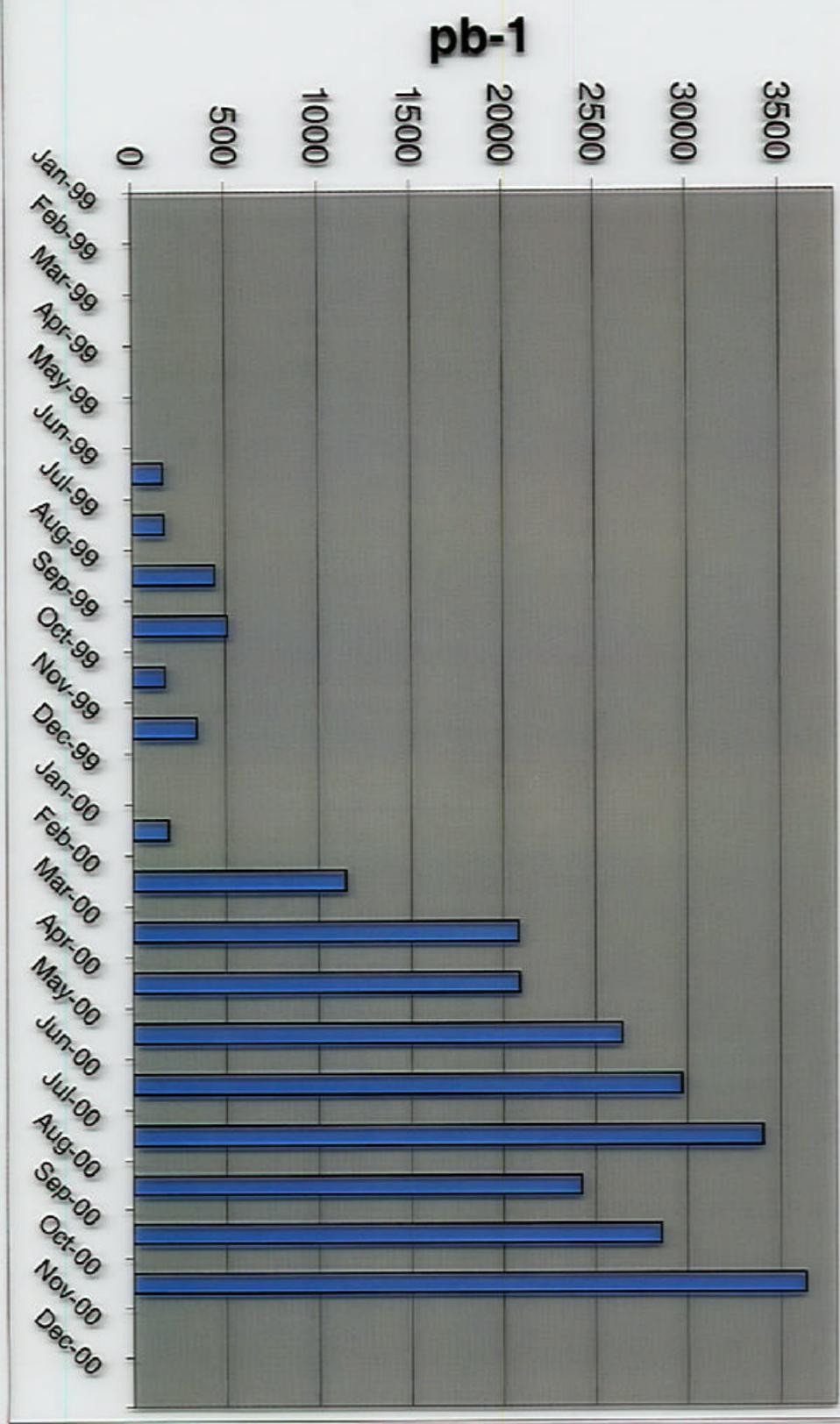
PEP-II Daily Integrated Luminosity for 2000



PEP-II Weekly Integrated Luminosity for 2000



PEP-II Monthly Luminosity



PEP-II Records

	Achieved	Design
Peak luminosity ($\times 10^{33}/\text{cm}^2/\text{s}$)	3.10	3.00
Peak luminosity with BaBar	3.02	3.00
Integrated lumi. per shift (pb-1)	62	45
Integrated lumi. per day (pb-1)	174	135
Integrated lumi. per week (pb-1)	975	785
Integrated lumi. per month (fb-1)	3.6	3.3
Peak HER e- current (mA)	920	750
Peak LER e+ current (mA)	2140	2140

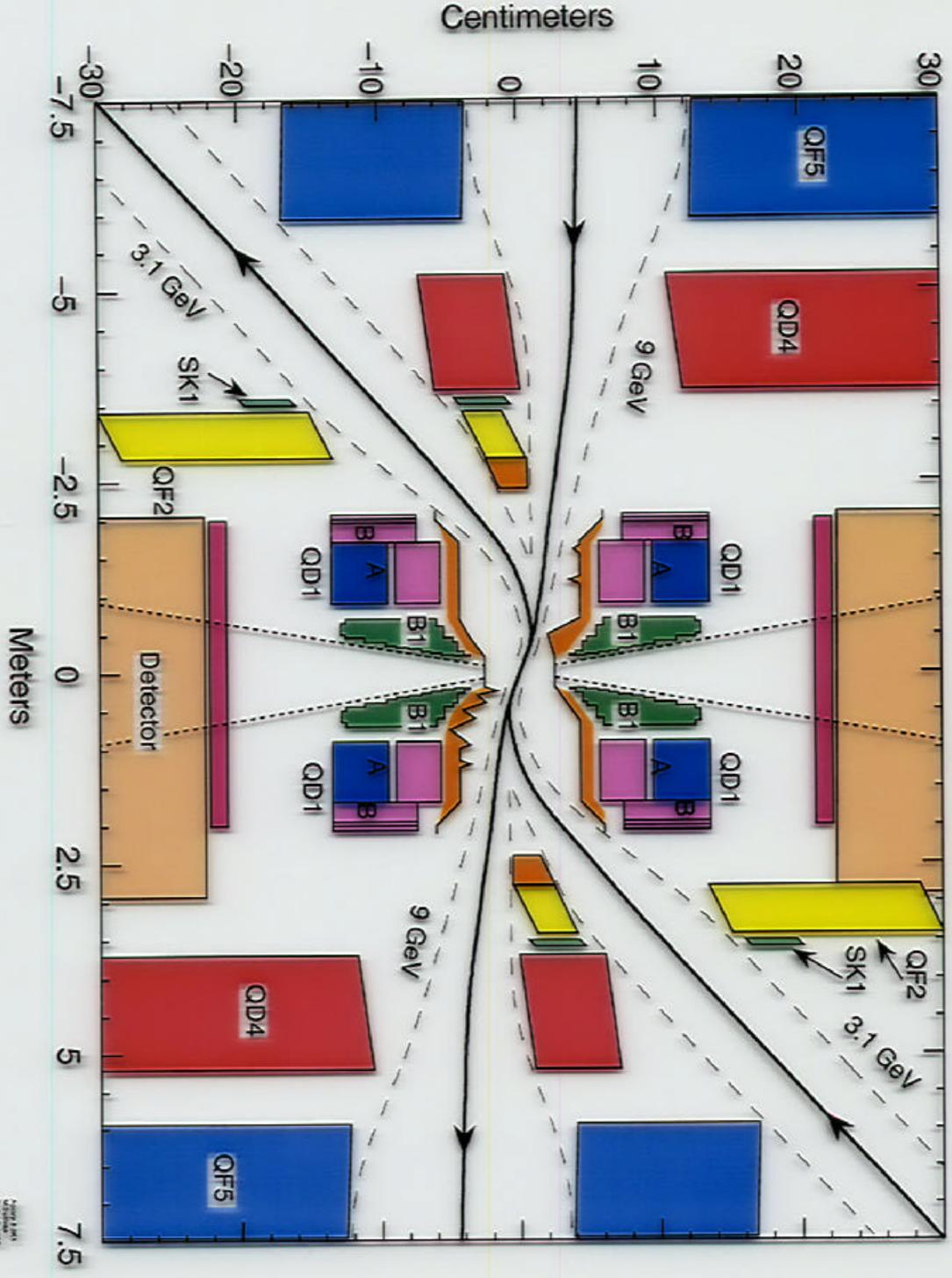
PEP-II Integrated Luminosity

- *From May 1999 through October 2000*
- *PEP-II has delivered about 25.3 fb⁻¹*
- *BaBar has logged about 23.5 fb⁻¹*

PEP-II Future Plans

- Present run started February 3.
- Present run will end August 31.
- Followed by a two month down.
- Luminosity (goal) in FY01 is 5×10^{33}
- Integrate about 32 fb^{-1} by September
- Luminosity of 10^{34} in CY2003

PEP-II Interaction Region



PEP-II Downtime Work

- New HER High Power Dump → More e-
- New Low Pressure Chamber → Lower backgrounds
- Two new LER collimators in IR2
- LER Arc Solenoids → Reduce e+ blowup for ECI
- Temperature management of Be chamber bellows
- HER Pulsed Separators → Beams in-out of collision
- Add tunnel shielding wall on forward end
- Installed new LER RF station (e+ 2A → 3 A)
- Started two new RF stations (two year project)
- LER Arc 7 vacuum leaks and new pumps (better τ)

