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## RHIC Performance With Intrabeam Scattering

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April 1984

Collider Accelerator Department

Brookhaven National Laboratory

## **U.S. Department of Energy**

USDOE Office of Science (SC)

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## RHIC PERFORMANCE (IN) WITH INTRABEAM SCATTERING (IV)

G. Parzan

BNL - April 16, 1984

RHIC Performance

 $X_{p} = 1.39$   $N_{b} = 1.2 \times 10^{9}$ 

Bx = 5/14 V=1,2×10

1116/84 4/16/84 t=10 hrs

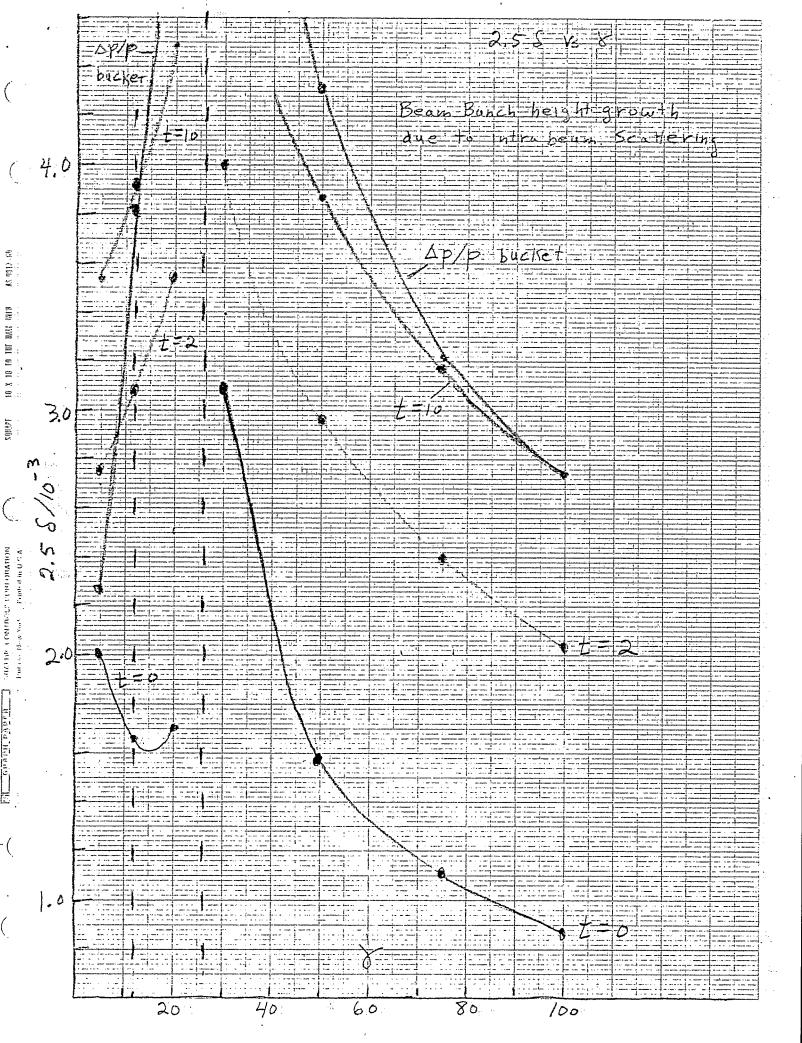
=		<del></del>			<del>1</del>	1		4		
_	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	5	12	20		50	75	100	182	
-	So/10-3 t=0	.818	.618	696	1.261	.643	.452	.359		
	Teo	128.	63.3	,	45.2	53.2	50.5			
_	E/10-6 += 10	89.0	44.5	3.5.8	33.2	27.7	27.8	27.8		
-	£/10-3; t=10	1.411	1.563	1.192	1.985	1.548	1.274	1.099		
-	To = = 10	221.	146.	95.0	71.7	128,	142.	146.		
,	RF 2,5 \$ /10-3	3.53		•	4.96	3.87	3.18	2.74		
	SP/P bucke/10-3		3.82	6.12	9.95	4.31	3.19	2.68		
-	Aperture									
_	Xp S (Cmm)	21.96	2.17	2.49	2.76	2.15	1.77	1.53		
_	OH = OV (mm)	12.4	5.64	3.42	3.08	2.18	1.78	1.54		
 	2.5 Xp E -	4.91)	5.42	6.22	6.90	5.38	4.42	3.82		
- - -	2,5 04	31.0	14:1	9.80	1.10	5.45	4.45	3.85		
-	Beam Half Width		13	\$ } \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	•					
:		35.1	19.1	ist.	14.3	10:6	8.10	7.52		
_	2,5 (TH+Yp5)			15.7	1,					
_	2,500	31.0	14:1	9.80	7.70	5.45	4.45	3.85		
:	Physical Half-Aprt	<b>-</b>					7) 			
	2.5 X, 5+6 FA	78.9	39.1	29.6	25.2	18.3	15.0	13.0		
_	6 OV	74.4	33.8	23.5	18.5	13.1	10.7	9.24		
· _	<b>y</b>	44. 4.2	,	-					•	
:_ - :	Av. Lum./Lo, t7,5	.150	,299	.368	,40%	.457	.452	.452		
	Lum, nosity/1026	,100	.475	, 965	1,57	2,9:5	4,38	5,83		
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						ε				
		Lumi	nus, ty =	12:4×	1026 X	Lumav	* 8/10	O.		

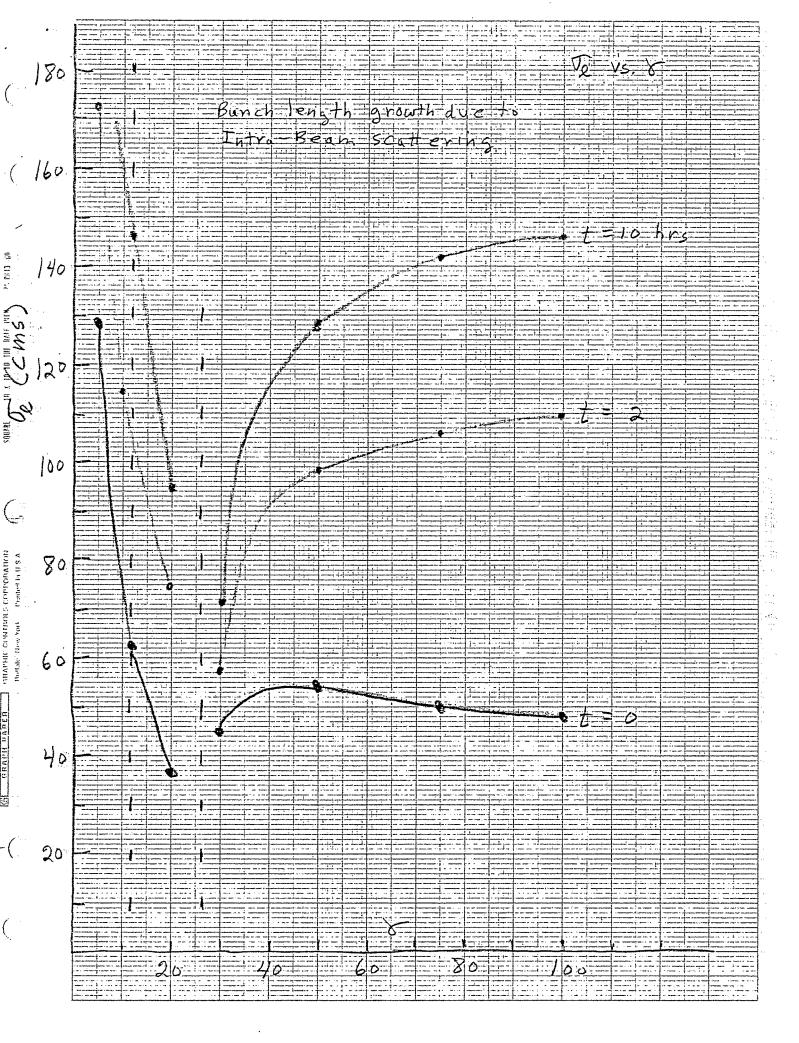
RHIC Performance

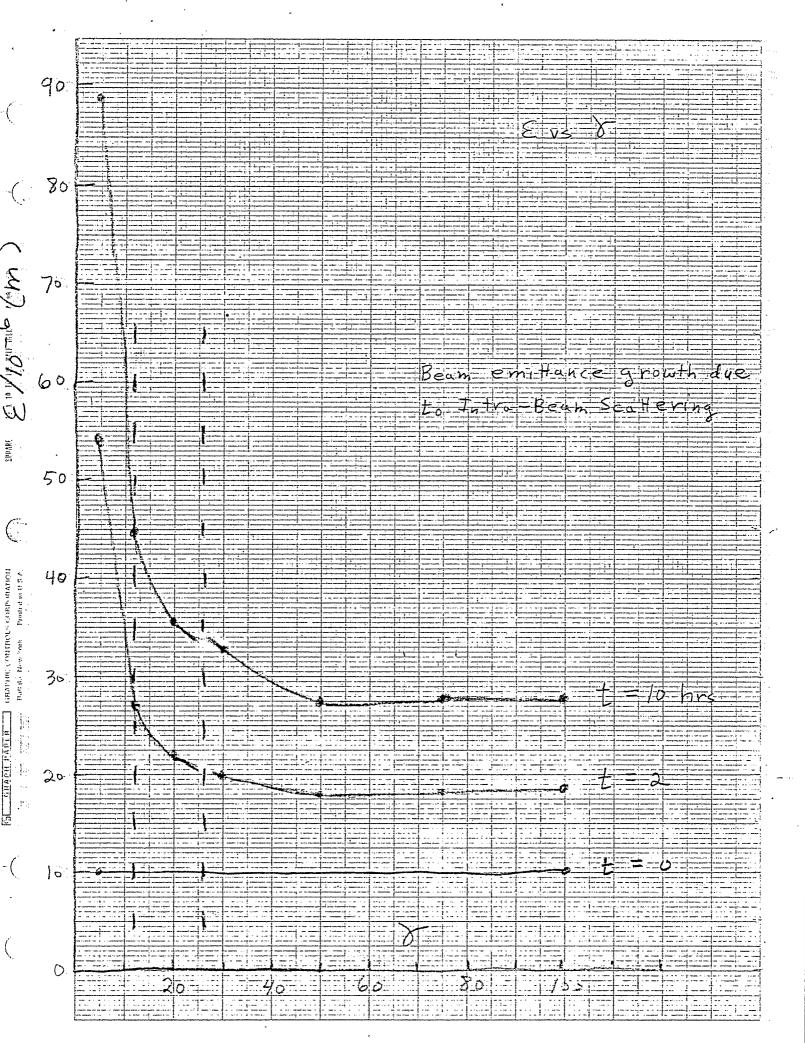
XP =

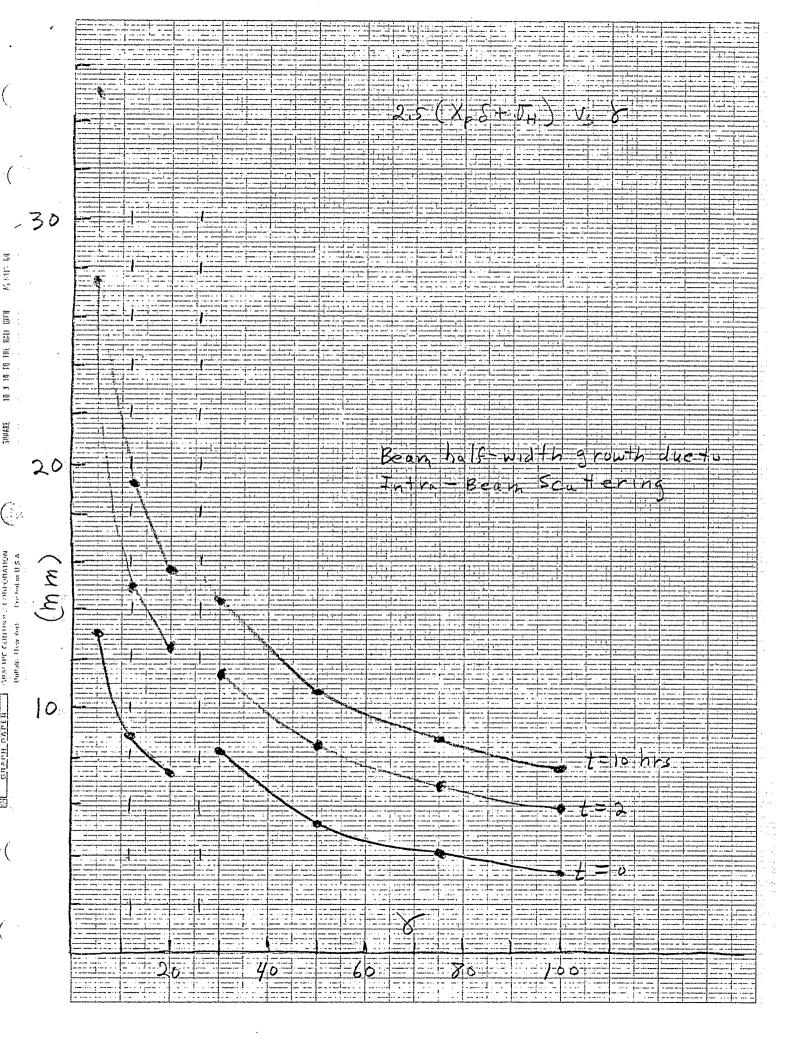
PHIC3 4/17/84 t=2 hrs

		·,···							
,	8	5	12	20	30	50	75	/00	86
	So/10-3 t=0	.818	.678	.696	1.26/	.643	.452	359	
:	Teo t=0	128.	63.3	36.9	45.2	53.2	50.5	47.7	
	E/10-6 += 2	54.2	27.4	22.4	20.4	18.3	18.5	18.7	
	£/10-3 +: 2	1.104	1.230	1.414	1.604	1.180	.951	817	
	To t=2:	173:	115.	75.0	57.5	97,7	106.	109.	
	RF:							40	
<u> </u>	2,5 \$ /10-3		- 3				2.38	鑑	
:	bp/p.bucke/10-3	2.28	3.82	6.72	9.75	4.51	3.19	2.68	
	Aperture Xps (mm)	1.53	1.7/	1.97	2.23	1.64	1.32	1.14	
-		9.64	4.42	3.09	2.4/	1,17	1.45	1.26	
	2.5 X & E	3.82	4.28	4.92	5.58	4.10	3.30	2.85	
	1 2,5 0	24.1	11.0		6.02		3.62	3.15	
-		47	r.;					(in the state of t	
	Beam Hatt Width					·		:1:4  :01	
<u></u>	2,5 (TH+ Yp &)	27.4	15.00	12.4	11.4	8.36	6.80	5.88	
:	2,500	24.1	11.0	7.72	6.02	4.42	3.62	3.15	
:	Physical Half-Aprt				-9 -	3-1			
			30.7	23.4	19.9	14.6	12.0	10.4	
<u> </u>	12.5 xp.5+6 m	61.6			14.5	<b>9</b> 1	8.70	7.57	
	1 6 0 7	57.8	26.5	18.5	1.7.5°	10.6	0.10	124	<u> </u>
	1 Av. Lum/Lo, £7,5	224	.442	534	969 646 <b>5</b> 8 <b>8</b> 5 5	:623	.611	96/20	
	Luminosity/102	.165	753	1,48	2,40	4,20	6,18	8,22	
	11	55 (c) - (a <sup>2</sup> 5) - (a) (c)		ios, emp			· ·		
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	.1						7 (a)	<u> </u>	ļ









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Average hum massify Charma lized to  Peak Value													
Average Ruminosity Character to peak Value yes 8	18												
Average Ruminosity Character to peak Value, VS. 8													
Average Ruminosity Character to peak Value yes 8	7												
Average Lum nosity Charma treets  Peak Valle Common treets  Peak Valle Common treets  13											-21	nrs =	
Average Luminosity Charma Ized to  Peak Value Vs. 8  12	in the second												
Average Luminosity Charma i zea to  Peak Value y vs. y	,	The second secon											
Aberage Luminosity Charma ized to  Peak Value y vs. 8	_												
Average Luminosity Charmelizes to  Peak Value 7 vs. 8	15	No.			•	722					10		
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Average Luminosity Charmellized to  Peak Value) Vs. 7	,4							<del></del>					
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Average Luminosity Charmalized to  Peak Value y Vs. y  .)	13							Ļ					
.2 Peak Value, y Vs. y									+ y ( v	larma	1 ze	4 +3	
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