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## Intrabeam Scattering In RHIC

G. Parzen

December 1983

Collider Accelerator Department Brookhaven National Laboratory

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

USDOE Office of Science (SC)

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RHIC-PG-18

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#### INTRABEAM SCATTERING IN RHIC

G. PARZEN

(BNL, December 8, 1983)

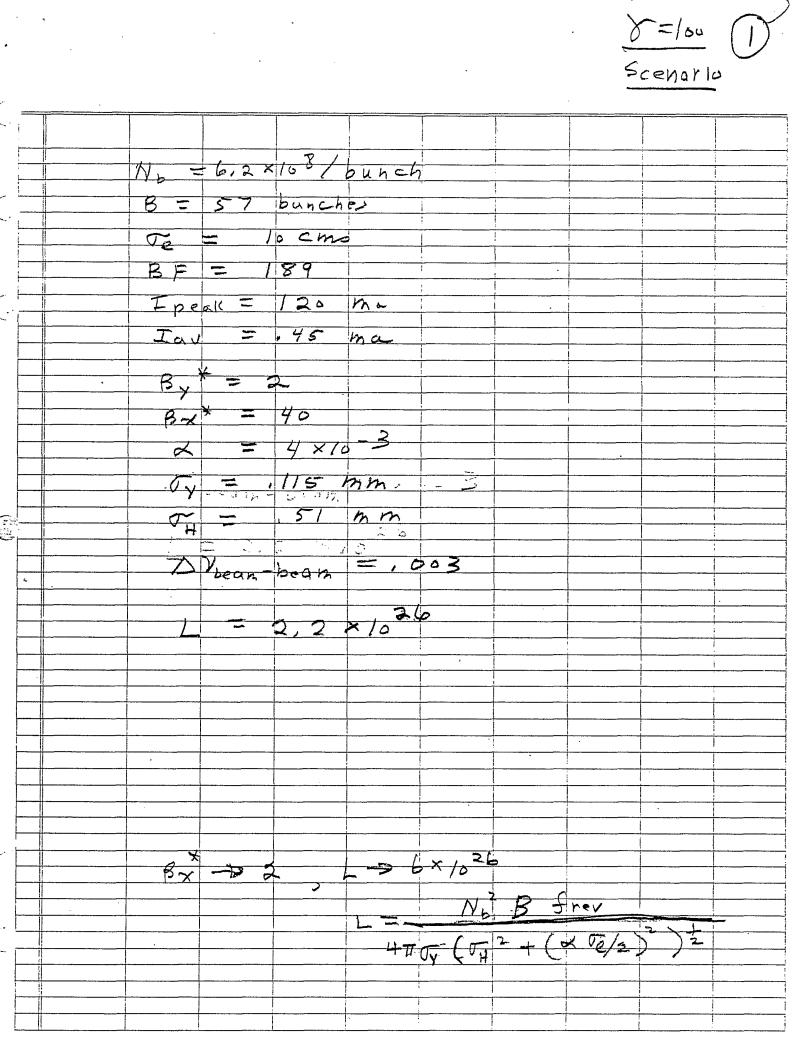
# RHIC-PG-18

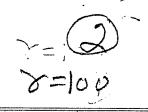
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	EPX	k = 12 N = EF	YN =	<u>4</u> 77		•	7. em.	#апсе)	
Vary	22,6		R/y = Hance		6	$= R/y^2$			
GH/hr GS GV GH GS	. 4 15.7 12.9 4 t	. 8 8,89 1. 83 	9, 2 ,41	1, 6 4. 66 1.24 1.2;	2,0 3,76 ,12 098		$B_{X}$		x 1,3
GV Vary EPXN/10 <sup>6</sup>			Epzn 16	1 = 4 77 / 40	10-6	, S = 1	, 2 ×/0	-3	
GH/hr GS GV GH/hr GS GV	7,97 172 -121 11,5 142 15	2,48 .55 -,083 4,2 .35	1,07 .40 -,01 1,5 .27	, 26 , 25 , 046 , 37 , 18 , 10		<b>)</b>	; <sup>\$</sup> ; X <sub>Y</sub> ce (C		
· Var EPXN/16	6 4	2 X N =	EP2 12	/6	۔ ج از	,2 ×10	-3		
GH GS GV GH GS GV	7,97	/,6 ,29 ~,0'4/	.71 .19 018 .94 .29 014	, 39 .15 -,01 ;51 ,22 -,009		LaHic	βx, X <sub>t</sub>		

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8=100

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	II <sup>−</sup> −	$\frac{1}{1}$	feavat	lon S	-17	×10-3	EPXNO	= EP7	$v_0 = 4/x_1$	-6
1	l		-) 1 -	, , , , , , , , , , , , , , , , , , , ,	0-12		- 1 / 1 - 1			, ;
						1	· · · · · · · · · · · · · · · · · · ·	2 2 9		
1										
	T (hrs)	0	.031	,0876	. 191	,386	,765	1,52	2,53	LUN
•.		1				1		-		
¥	EPXN/1			6,0		13,5		30,4	39.7	
¥	EPZN. - 8/10	2,67		2.6				2.7	2.97	
	- 8/15	12/12		1,27		2.5		1.7	1. 75	
	<b>C</b> 11 J.	l		11 11					1	
· · ·	UH/br	7,97		4,44		11.28	·	.15	, '	
-	GS	.72		.53		- 33		1083	3	
	GY	21		-, 1 3		-,0/11		1040	<u> </u>	
	Lum			765		11:0	1	21		
				,76		.42:		.31	102	?]
	F (min	9-151-		.77		1,2		1.7		1
		· · · · ·		1030		· · ·		<u>, , , , , , , , , , , , , , , , , , , </u>		
	· · · · · · · · · · · · · · · · · · ·					1 × 10°	56		1: 7	
¥	90.70 0	mittan	ce	Lav	$\sim$	1 × 10°	aven	ahrs		
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		•								
		•					2			
	<i>I</i>	ime i	ntegr	tion	Jo = 1	4 ×10-	3, EPX	$N \circ = EP$	ZAO = 9	X10-0
			-					· · · · · · · · · · · · · · · · · · ·		
	T Chrs)	6	,629	.133	514	1.51	2,51			·
	· UNES/	<u> </u>	1221	1422	1.514	1.51	<i><i><i>Φ</i>121</i></i>		Ì	
	EP XN/10	P 2. L7	5,33	E i i	21.3	3517	414.			
		2,67	2.59				2.94			
	5/10-3		,56		5.51	2,7	1,63			<u> </u>
	-						1102			X 3
	GH1h	16.9	4,81 4,02	1 1	134	. 117				
	65	13,9	4,02	1	,29	,101				
	GH/h GS GV	- , 4 4 4	-,14	1. 5. 4 4	1043	104	\$			
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8=12 X=12, minutes operation ~ 10%/min 90% Growth peak = 12 ma, Te = 100 cm, BF = 20EPXN = EPZN = 4 TTX/0 = (957. emittance) XIZ. 5/103 ,2 ,4 2,0 , 8 1,2 1,6 GH/hn -3,4 -1, 2167 ,34 1,69 1,65 Bx Xp constant -,38 GS -,22 121 10 -,75 -,65 -2:8 -8 79 1,54 1,6 1,5-4,9 4,6 G4 ,12 2.8 4,8 4,6 Luthce (FBA) 120-8,3 ,075 -,40 -,32 -,72 GS 13 GV 4,5-4,4 -lib 3,1 4,3 hours operation 8=12, E. Growth 2 1-2 hrs goal EPXN=EPZN=8TX10 Ipeak = 4 ma, te = 300 cm BF = 8/15-3,4 .8 1,2 2,0 4,0 GH/Ar -. 9 -. 023 ,033 ,054 .040 65 3,0 ,094 -.059 -.035 -.0066 GV -.402 -.0498 .071 .118 .088 ,094 Bx, Xp constant 65 GH/hr 235 ,38 ,41 ,39 ,30 - La Hike (CBA) ,012 -,067 -,035 -,0079 Gs 2,2 GV -.13 ,261 36 37 29  $T_{Y} = 3 \times 1.15 \text{ mm}, T_{H} = 3 \times 1.51 \text{ mm}$ 2 02/2 =6 mm 2,2 ×1026 25 = ,6 × 10 3×12

Confidence in Results

