

Feedback from users of February Production

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SuperB Workshop
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FastSim

- 1 Application runs generator through analysis selection
- Several analyses run in parallel
 - 5 'analyses', several modes per analysis
 - roughly '3-times' the number in Feb. as Nov.
- Output is analysis tuples
 - Mistakes made in analysis are 'permanent'
- Can mix in backgrounds
 - RadBhabhas from full and fastsim
 - e^+e^- pairs from 2-photon process

Production Output

- Requested
 - $\sim 1 \text{ ab}^{-1}$ generics
 - $\sim 10^9$ BB, ccbar, uds
 - 2.1 geometries (2 full SuperB, 10% BaBar)
 - with all backgrounds
- Produced
 - $\sim 0.2 \text{ ab}^{-1}$ generics without background
 - $\sim 0.01 \text{ ab}^{-1}$ generics with radBhabha background
 - Signal modes with radBhabha bkg

Fast Simulation production: summary

- **Generics** production **without background** mixing: **10^9** events
- **Generics** production **with background** mixing: **10^8** events
 - only a fraction of the foreseen sample due to initially very high execution time issue
- **BtoTauNu** signal with background mixing: **3×10^6** events
- **BtoKstarNuNu** signal with background mixing: **6×10^6** events
- **KplusNuNu** signal with background mixing: **6×10^7** events
- **BtoKNuNu** signal with background mixing: **6×10^6** events

Production Monitor

[fast]

FAST PRODUCTION SERIES

Production Series: 2010_February_Generics

Data taken from database

Production Series:	2010_February_Generics
Production root:	/storage/gpfs_superb/prod/
TAG:	V0.2.1
ARCH:	Linux26SL4_j386_gcc346
Release working Directory:	/storage/gpfs_superb/prod/prod/INFN-T1/test_release/SuperB/FastSim/V0.2.1_SL-4.6_j386/workdir/
LDAP uid:	LTomassetti

JOB STATS

Status	# of jobs	events
done	19 180	1 576 440 000
failed	544	35 545 000
sys-failed	1 152	96 265 000
Total	20 876	1 708 250 000

First Run number: 1002002000
Last Run number: 1003013629

Total wct run: 591 541 996 s
(18.758 yr)

2.5% failed jobs

FAST PRODUCTION REPORT

JOBS DATA

REPORTS

done, running, submitted and prepared JOBS					
Geometry	Generator	tcl	Total Number of Jobs	Total Number of Events	Total CPU time, wct (s)
DG_BaBar	B+B-_generic	MixBaBarBkg_NoPair.tcl	410	10 250 000	6 199 292
DG_BaBar	B0B0bar_generic	MixBaBarBkg_NoPair.tcl	404	10 100 000	6 299 508
DG_BaBar	ccbar	MixBaBarBkg_NoPair.tcl	215	10 750 000	2 357 493
DG_BaBar	uds	MixBaBarBkg_NoPair.tcl	203	19 490 000	2 703 634

SETUP

site
Site Report

analysis
Analysis Report

list last 50

FastSim Production

- PacProductionApp performance (BB generics)
 - without backgrounds: 0.7sec/event
 - with rad Bhabha bkg: 1.8 sec/event
 - with all backgrounds (including pair) 5 sec/event
 - Includes 50 MeV track P cut to reduce combinatorics
 - 80% of time spent in physics combinatorics
- Generics
 - ~25% of requested statistics
 - Most of requested signal modes



Breco efficiencies, generic samples (I)

$\epsilon = n_{sel}/n_{breco}(\text{purity} > 0.5, \text{abs}(\text{charge}) = 0/1, \text{pid requirements})$
 (see back up for stat errors on efficiencies)

neutral Breco	B0B0bar		BpBm		ccbar		uds	
	FullSim	FastSim	FullSim	FastSim	FullSim	FastSim	FullSim	FastSim
mES cut	0.254	0.209	0.116	0.111	0.125	0.101	0.125	0.121
deltaE cut	0.223	0.184	0.093	0.091	0.088	0.081	0.088	0.087
$\epsilon_{Fast}/\epsilon_{Full}$	0.85		0.98		0.92		0.99	

charged Breco	B0B0bar		BpBm		ccbar			
	FullSim	FastSim	FullSim	FastSim	FullSim	FastSim	FullSim	FastSim
mES cut	0.152	0.140	0.336	0.289	0.126	0.128	0.139	0.137
deltaE cut	0.118	0.110	0.309	0.241	0.089	0.090	0.096	0.094
$\epsilon_{Fast}/\epsilon_{Full}$	0.93		0.78		1.01		0.98	

loosing efficiency in the “signal sample”: B0B0bar for neutral Breco and B+B- for charged Breco



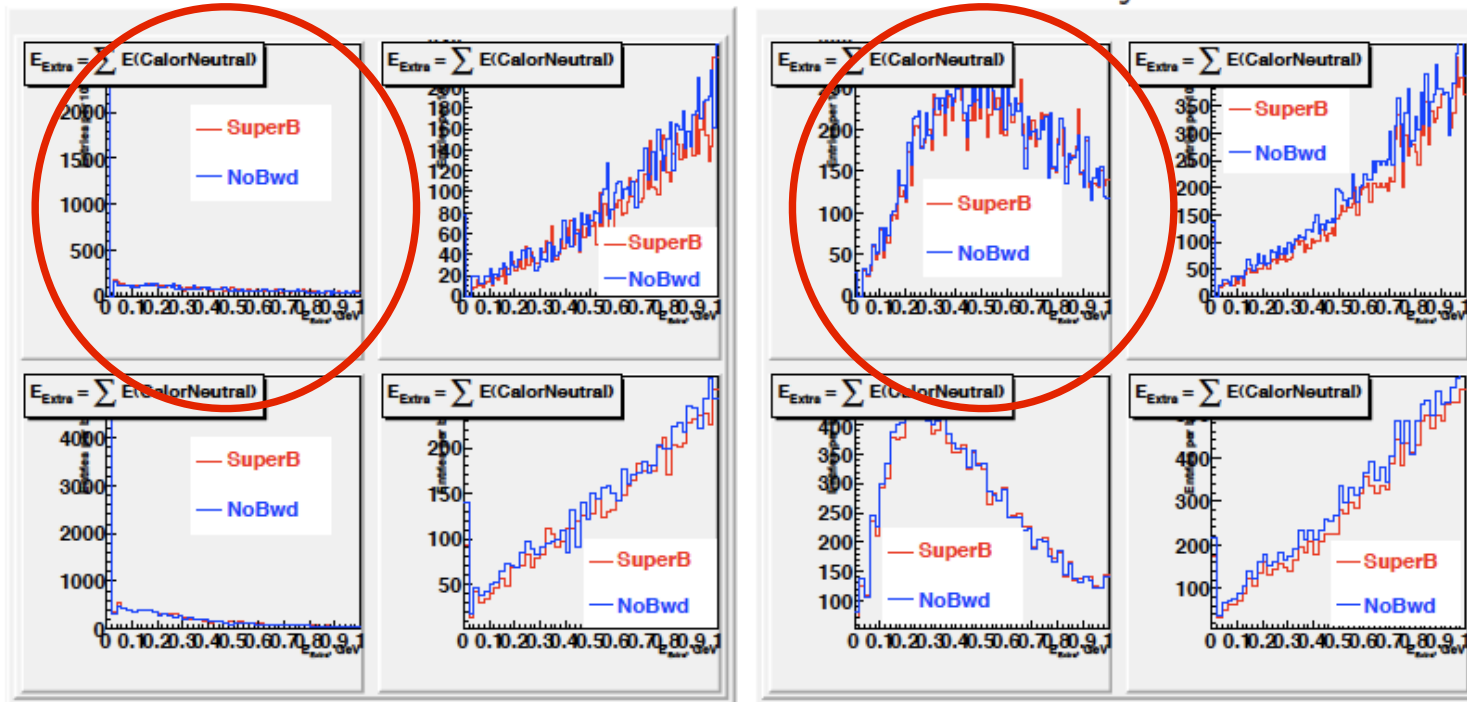
E_{extra}



Effect of neutral backgrounds

November

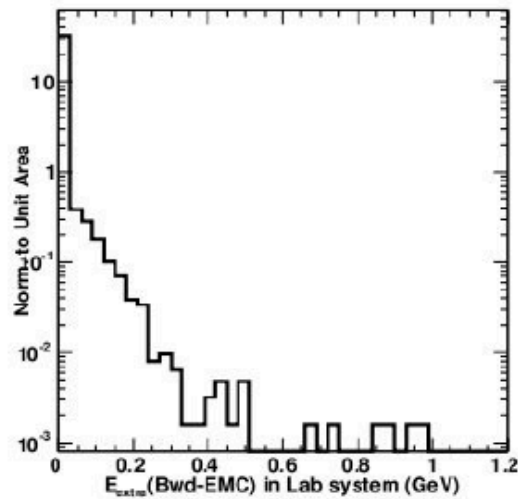
February



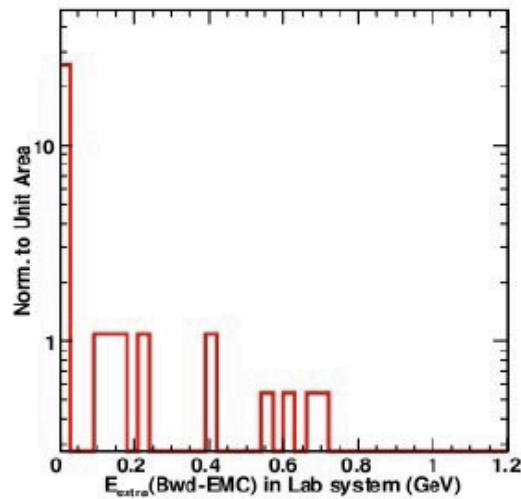
- Top: All B_{sig} , bottom: best B_{sig}
- Left: sig MC, right: generic MC

Preliminary Results: Bwd-EMC (I)

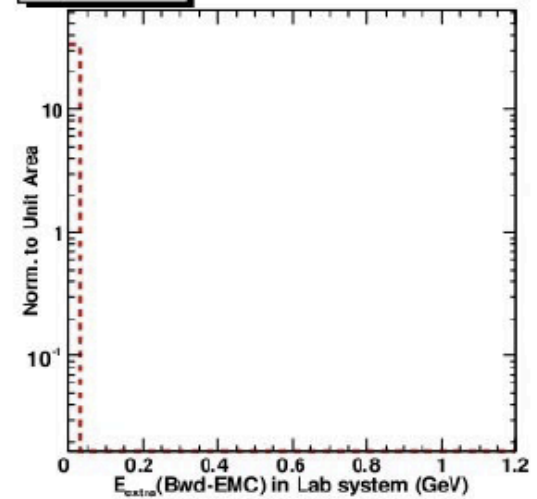
Signal $B^+ \rightarrow K^+ \nu \bar{\nu}$



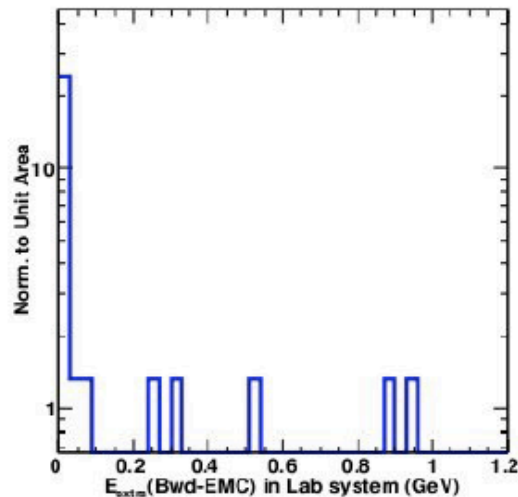
$B^+ B^-$ Generic



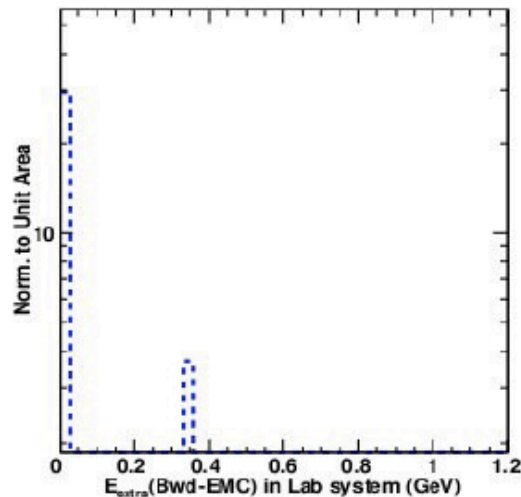
$B^0 \bar{B}^0$ Generic



$c\bar{c}$



uds



- $E_{\text{extra}}(\text{Bwd})$ distribution for all samples
- Low statistics for background samples

Conclusions

- February production output is being used
- Already lessons are being extracted
 - Calorimeter electronics
 - analysis cuts
 - Svt dE/dx and timing
- Basic DGWG requirements appear to be met
 - Forward PID, Backwards EMC
- Next production will be challenging
 - more statistics are needed
 - Full background mixing is essential
 - Must use smarter algorithms

Production Requests

http://spreadsheets.google.com/ccc?key=0AlxZAoO2DRDzdGVPMWjtSDIaU2Y0NDBINE1OLVQtaI

Production Requests

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	A	B	C	D	E	F	G	H	I
1	Unique Id	Production series	Production script	Events requested	processing time/event	Requestor			
2	1	2010_July	B0B0bar_Generics	10^9	0.7	All			
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19		GO TO THE SECOND SHEET TO SEE THE PROJECT PLAN GANTT CHART							
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Add Sheet Plan Details Gadget1 Unique Id

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