

b-Tag Track Studies

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(with Andreas and Tim)

Exotic Dijet Meeting
11/05/15

Track Cuts

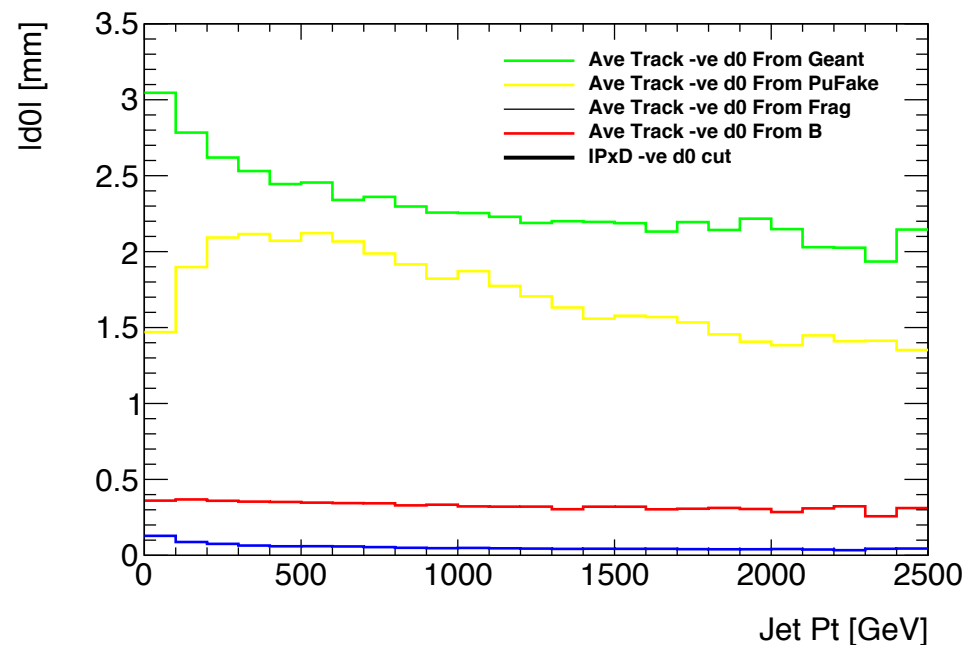
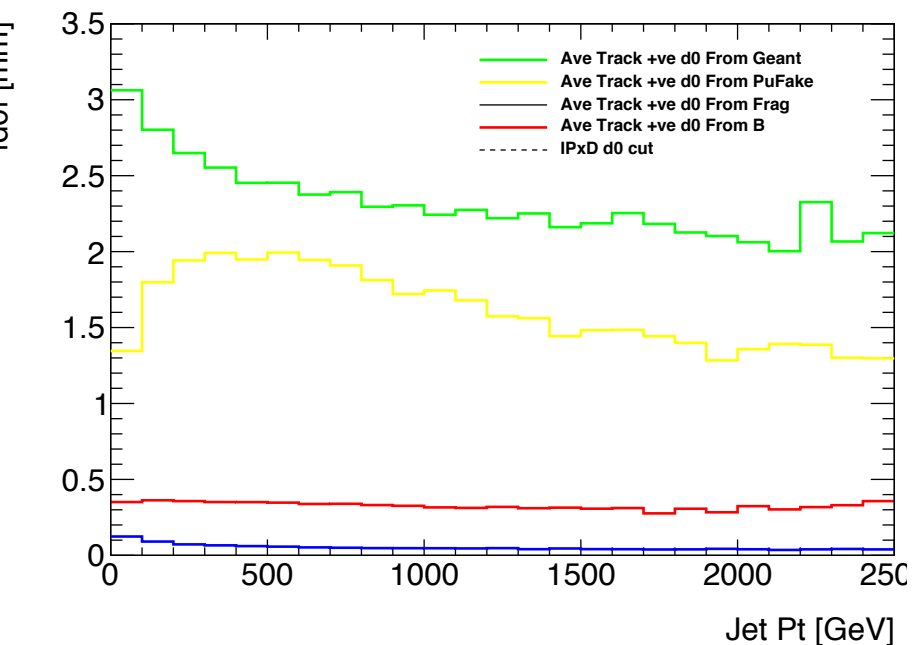
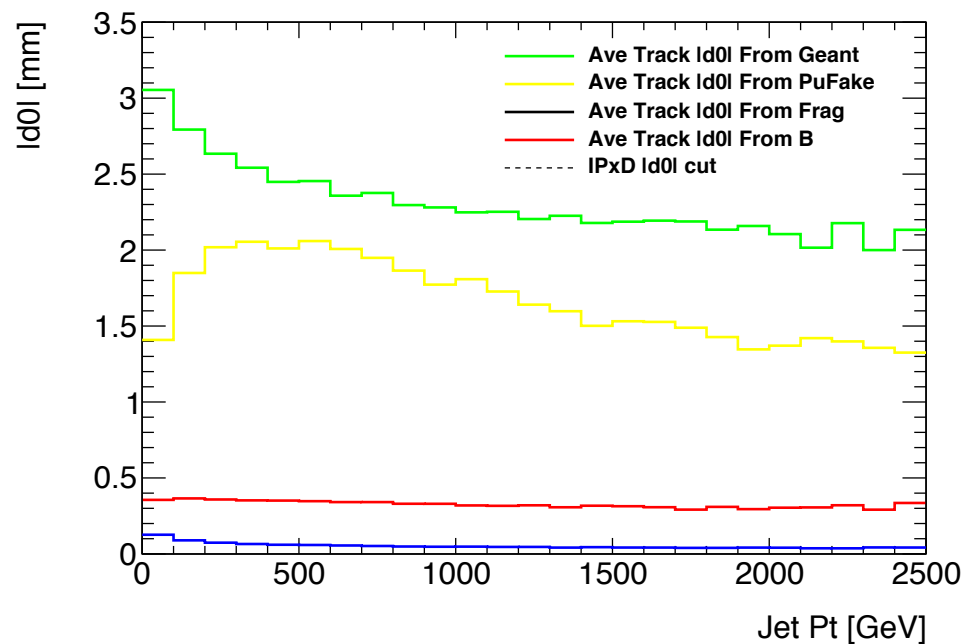
[From Talk by R. Zaidan at Flav Tag Workshop 2015](#)

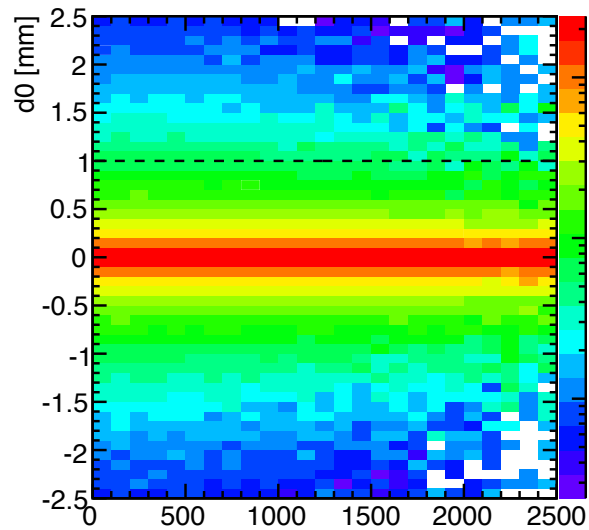
In this study I have applied these cuts manually in my analysis code.

Definitions

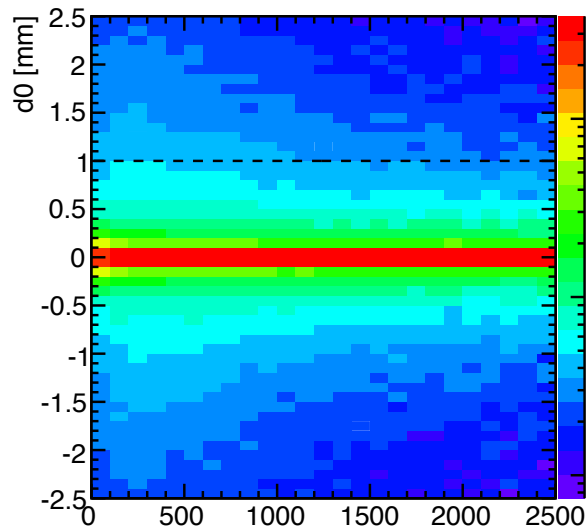
From B	=	Any track associated to the decay of the B or C Hadron
From PuFake	=	Any track without a well matched truth particle.
From Geant	=	Any track created by a GEANT interaction.
From Frag	=	Any track not From B or From Geant
From Other	=	Any track not From B
Selection Efficiency	=	$\frac{\# \text{ Tracks From X Selected By a Cut}}{\# \text{ Truth Tracks From X}}$
Fraction of Tracks	=	$\frac{\# \text{ Tracks From X Selected By a Cut}}{\text{Total \# Tracks Selected by a Cut}}$

	IP3D	SV1	JFit
$p_T \geq$	1000	700	769.2
$ \eta \leq$	2.5	2.5	2.5
$N_{SI} \geq$	7	7	7
$N_{SCT} \geq$	-	4	4
$N_{PIX} \geq$	2	1	1
$N_{IBL} \geq$	1	-	-
$N_{IBL} + N_{BL} \geq$	-	-	-
$N_{PIX}^{SH} + \frac{N_{SCT}^{SH}}{2} \leq$	-	-	1
$N_{SI}^{HOLE} \leq$	-	-	-
$N_{PIX}^{HOLE} \leq$	-	-	-
$d_0 \leq$	1	5	3.5
$z_0 * \sin(\theta) \leq$	1.5	25	5
$\sigma(d_0) \leq$	-	1	0.35
$\sigma(z_0) \leq$	-	5	2.5
$\chi^2/NDF \leq$	-	-	3.5

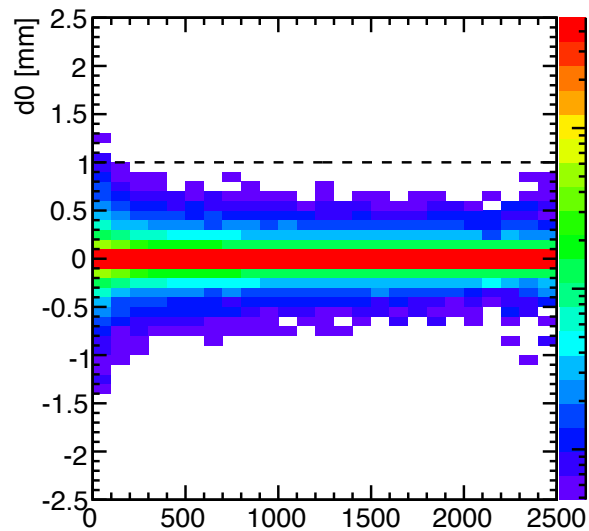




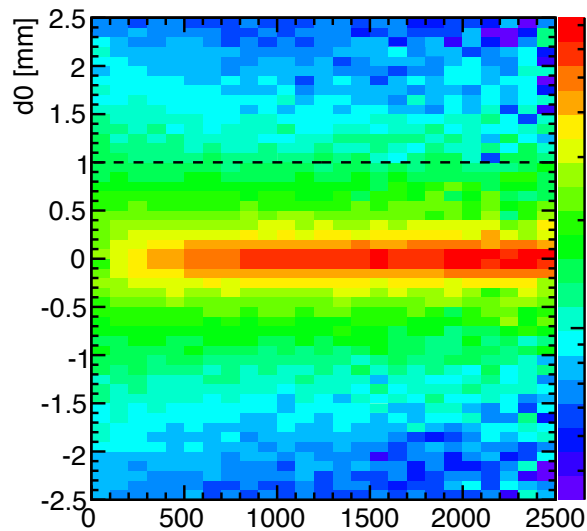
a) P_T From B Jet Pt [GeV]



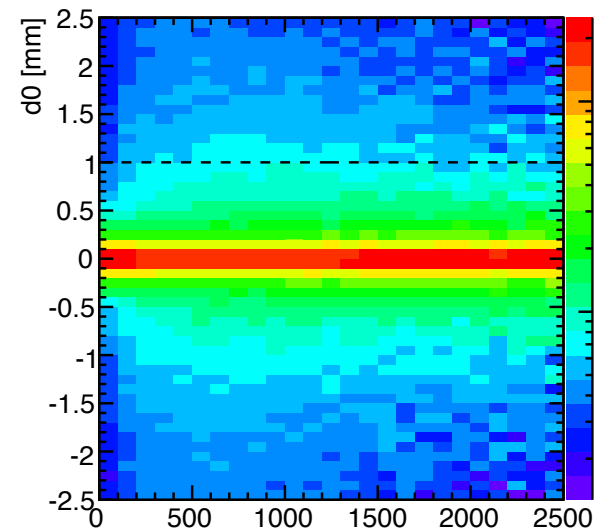
c) P_T From Other Jet Pt [GeV]



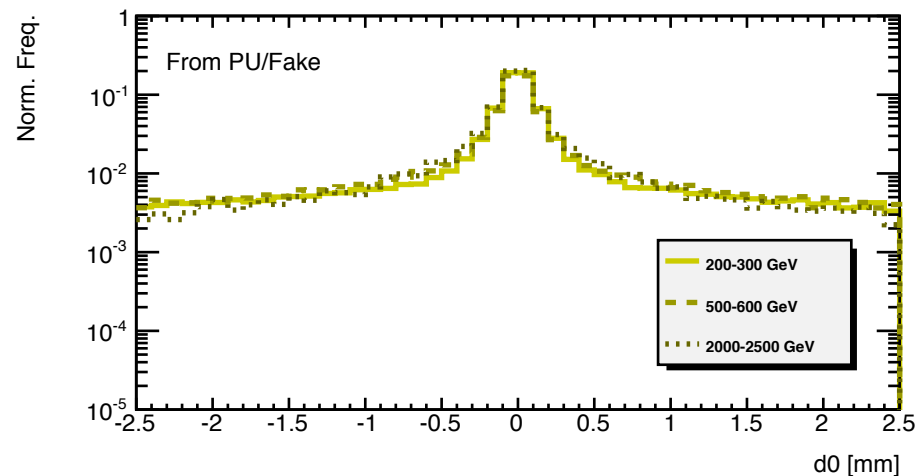
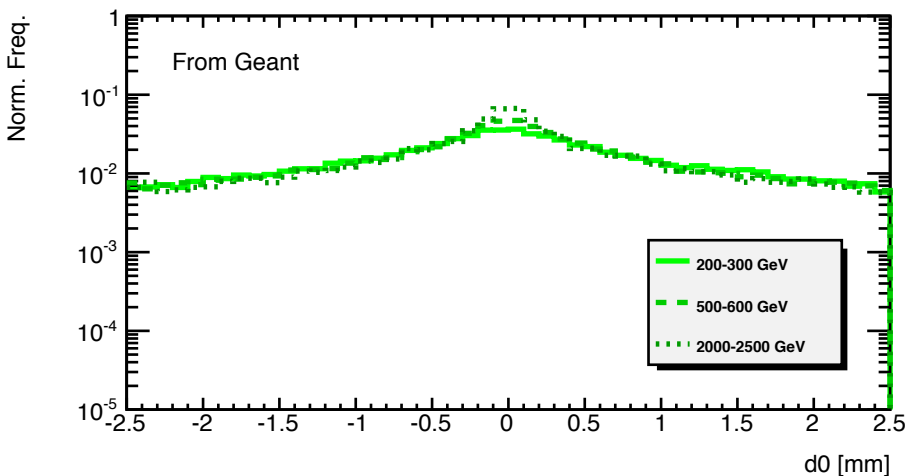
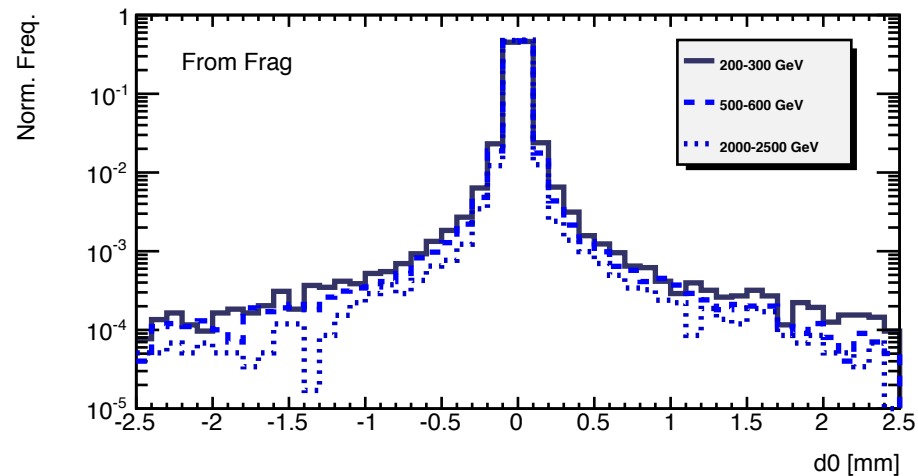
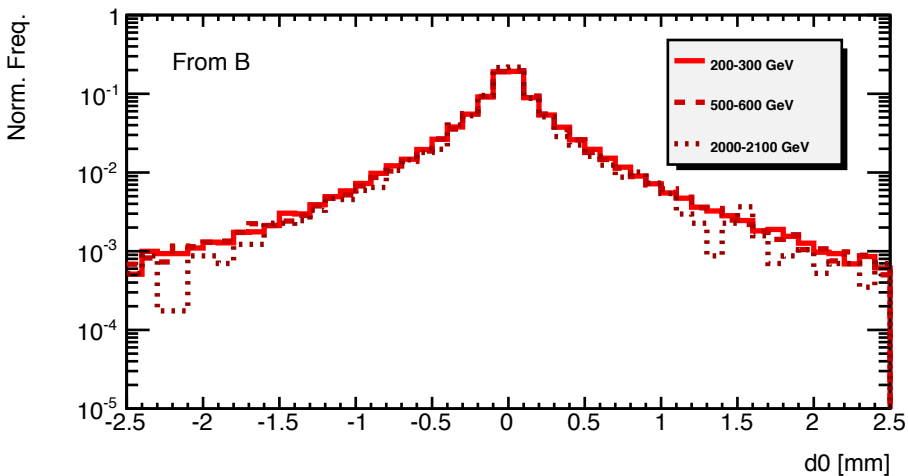
d) P_T From Frag Jet Pt [GeV]

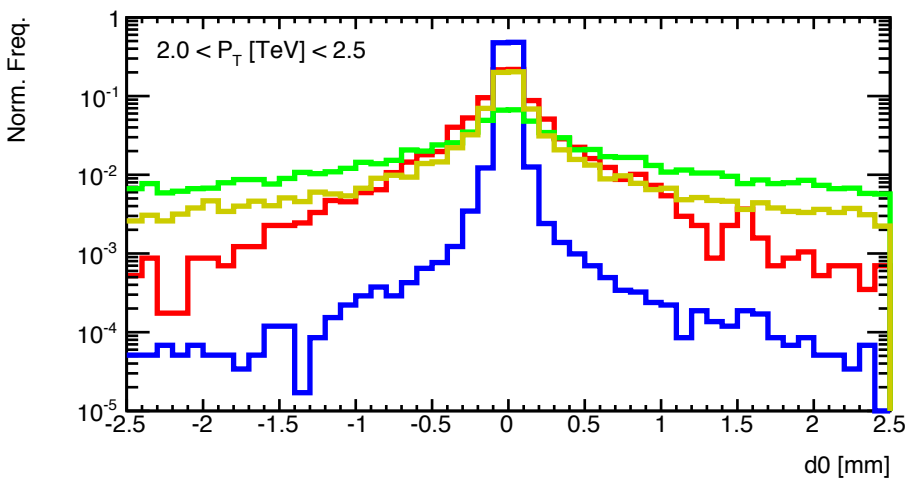
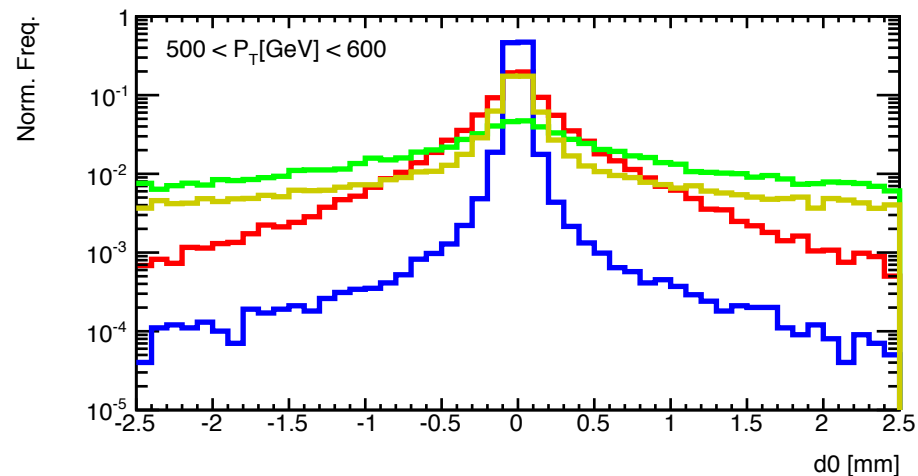
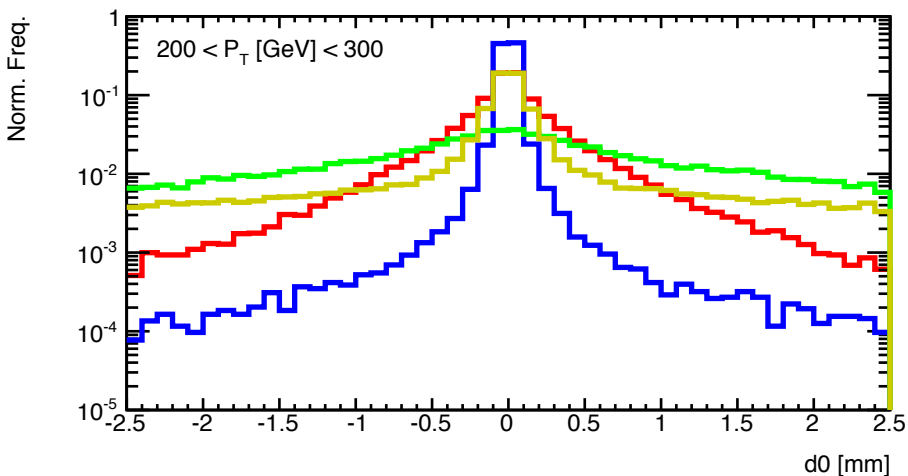


e) P_T From Geant Jet Pt [GeV]

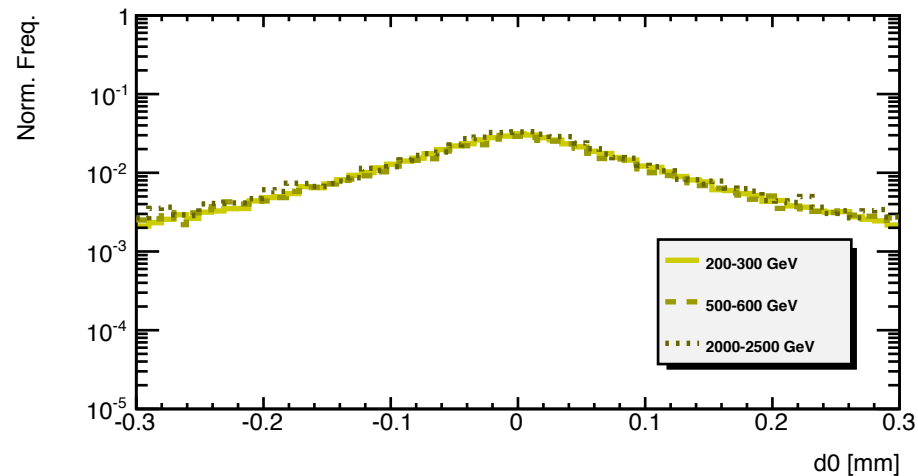
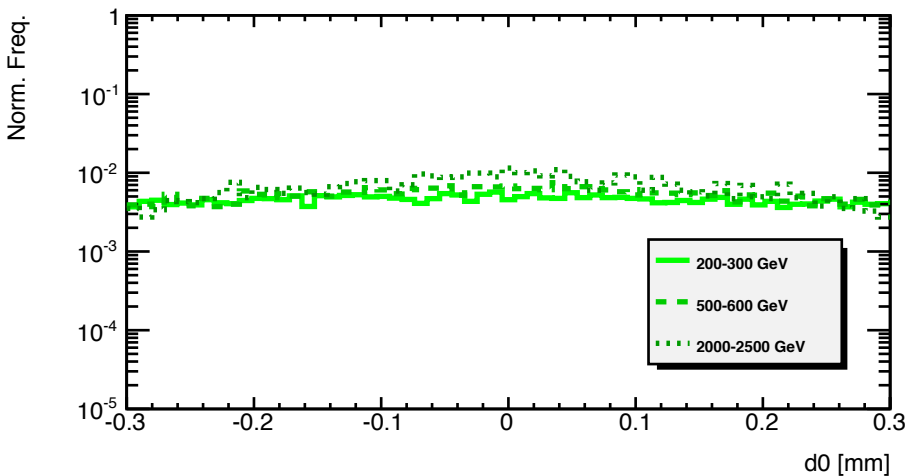
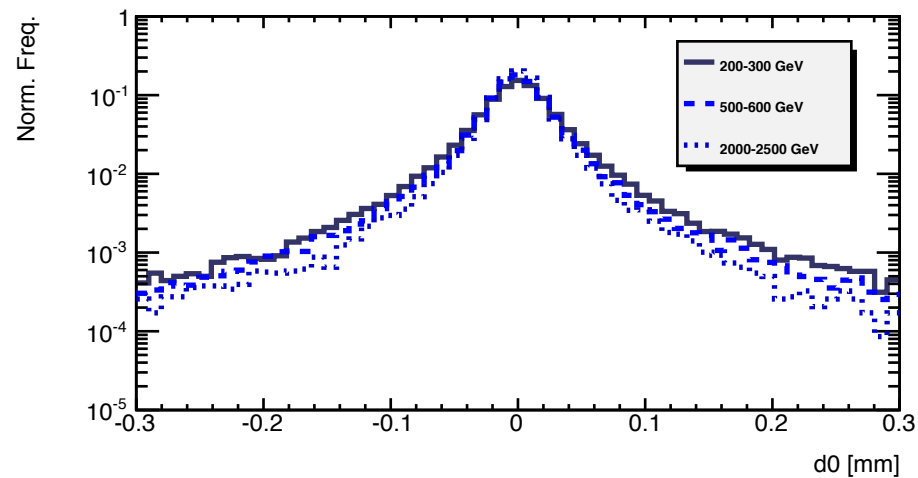
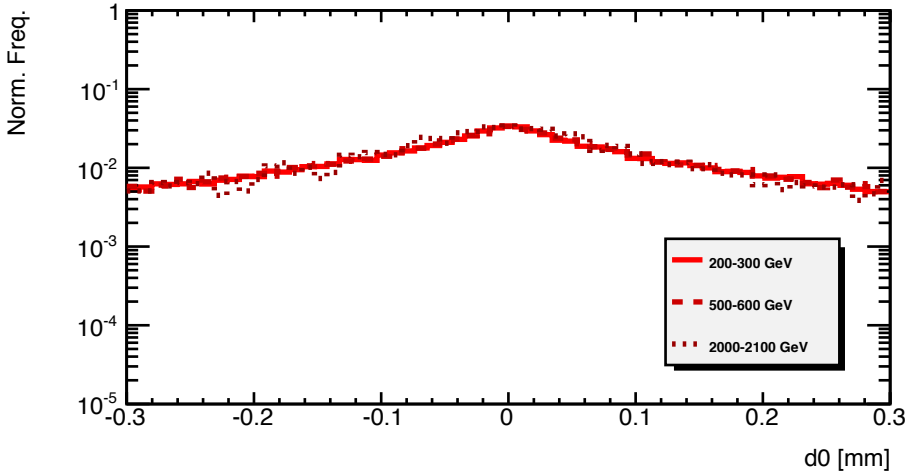


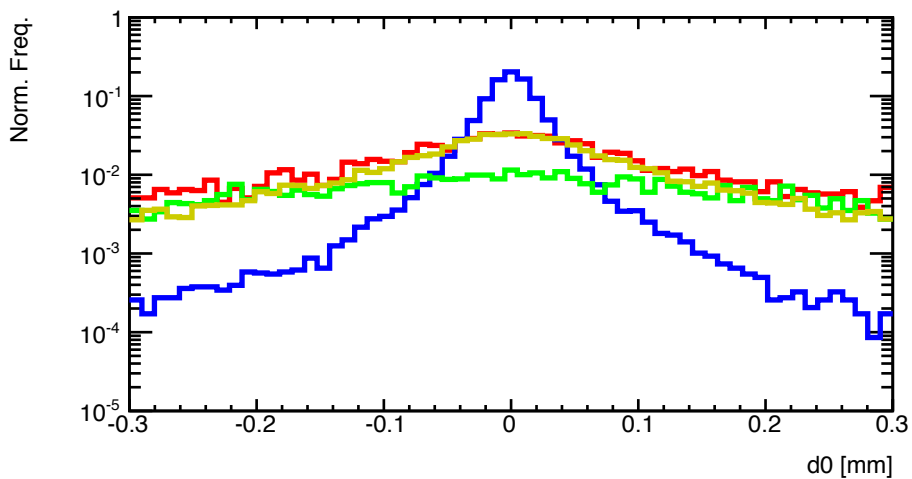
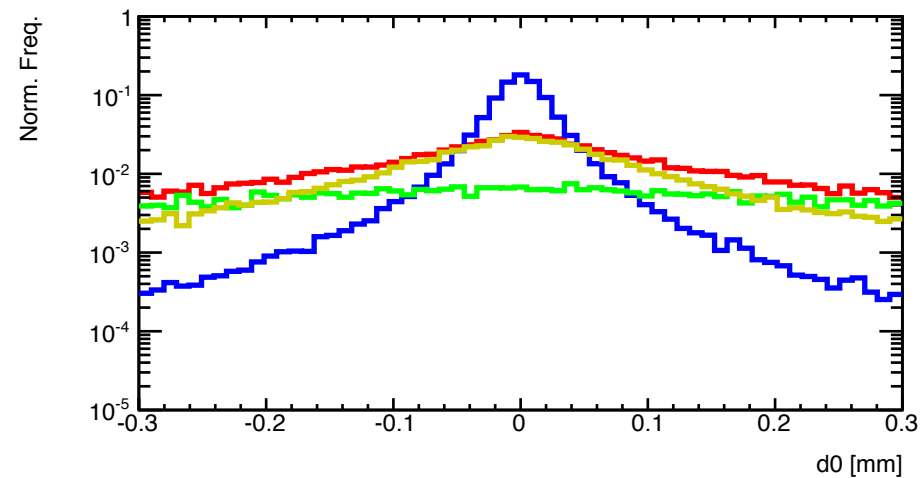
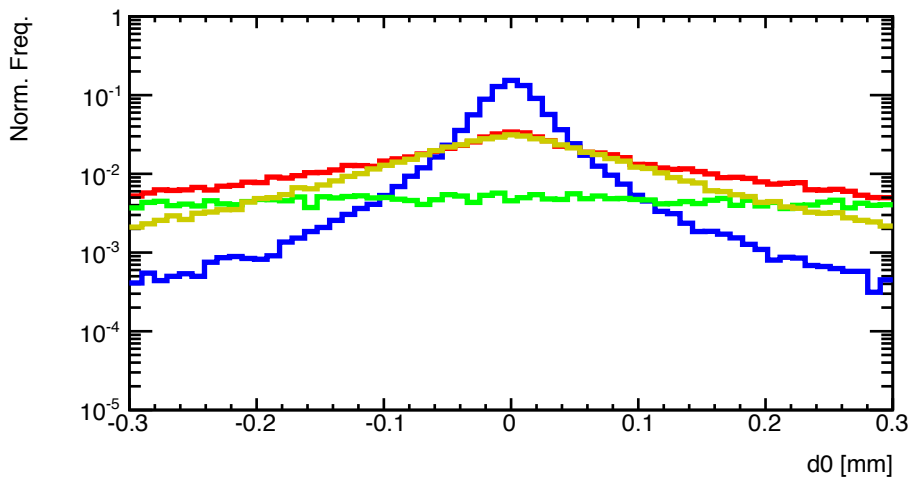
f) P_T From PuFake Jet Pt [GeV]



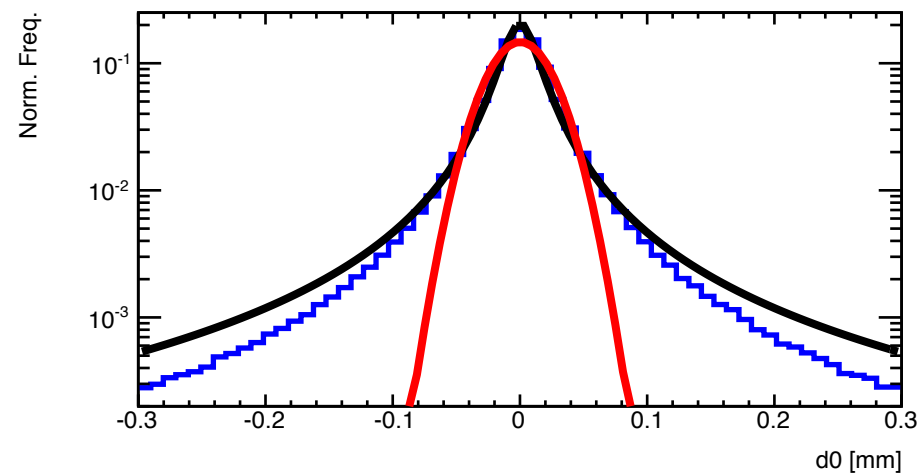
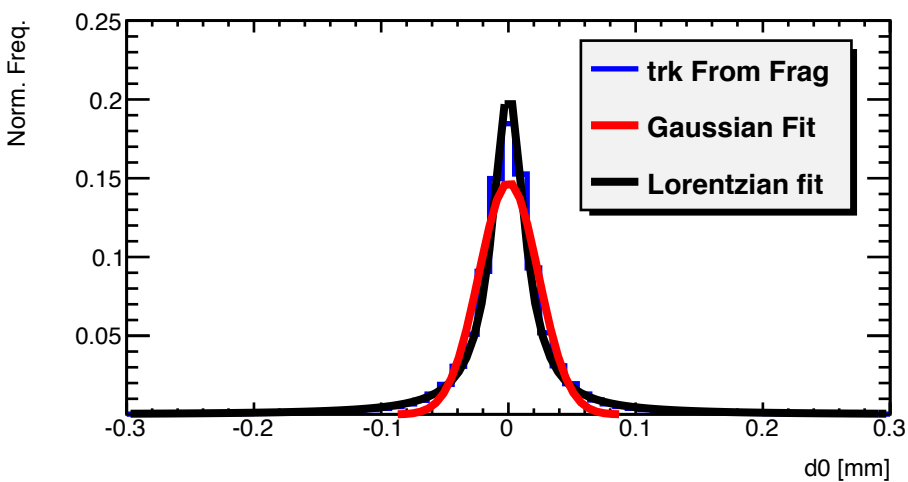
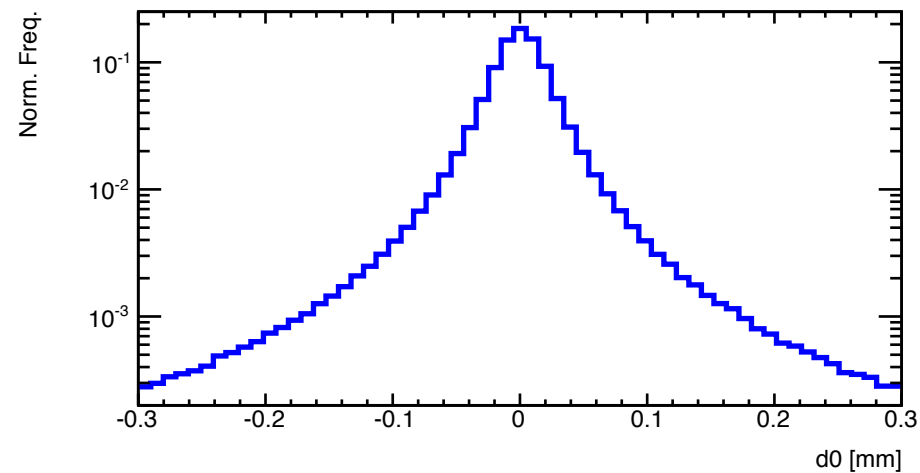
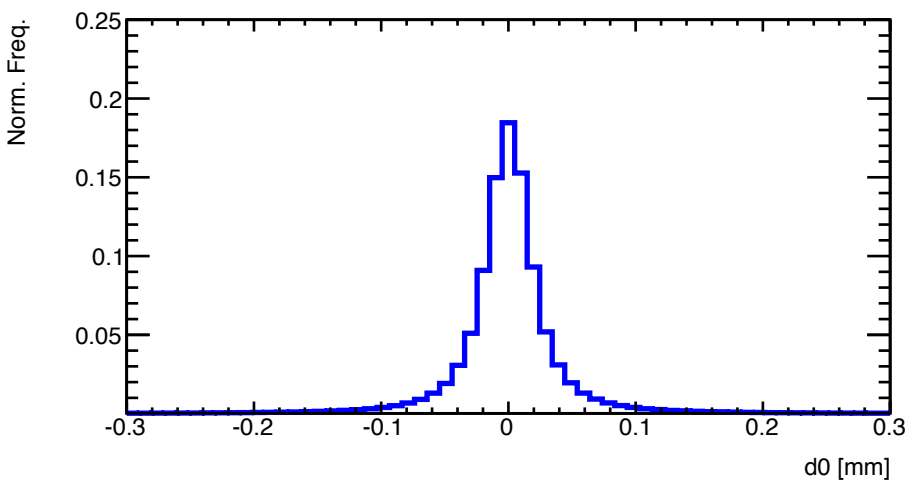


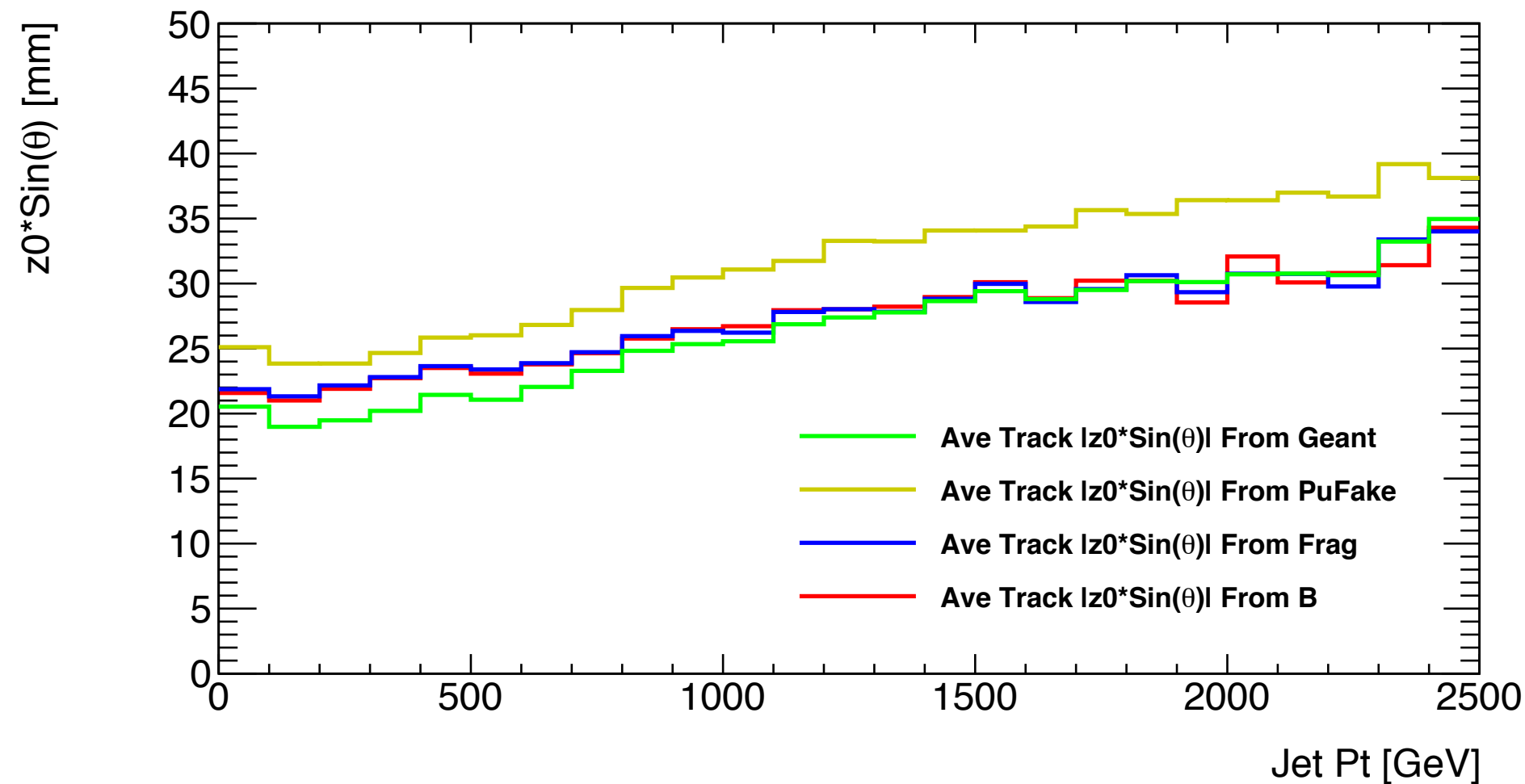
— From B
— From Frag
— From Geant
— From PuFake

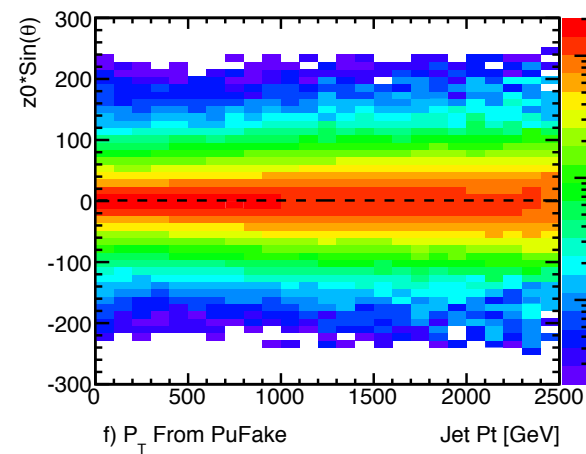
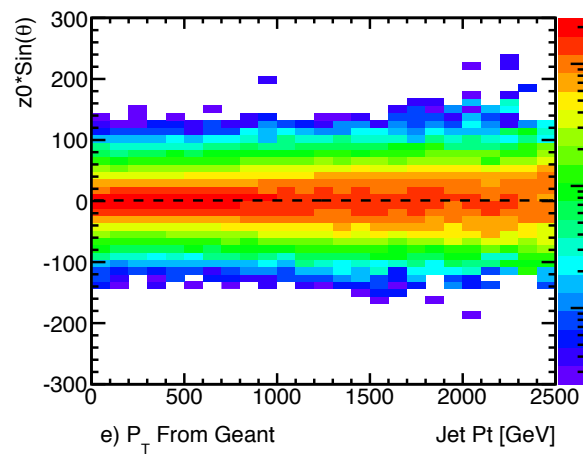
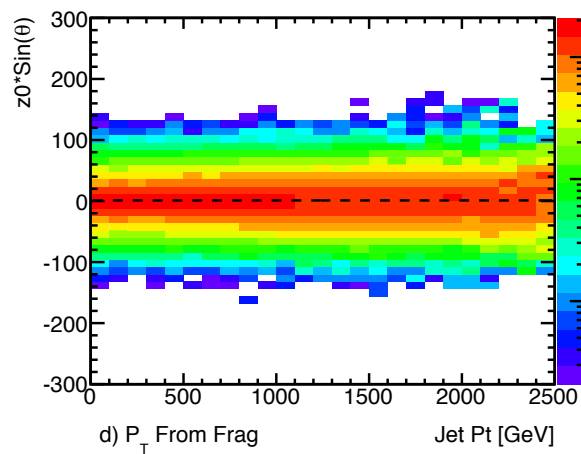
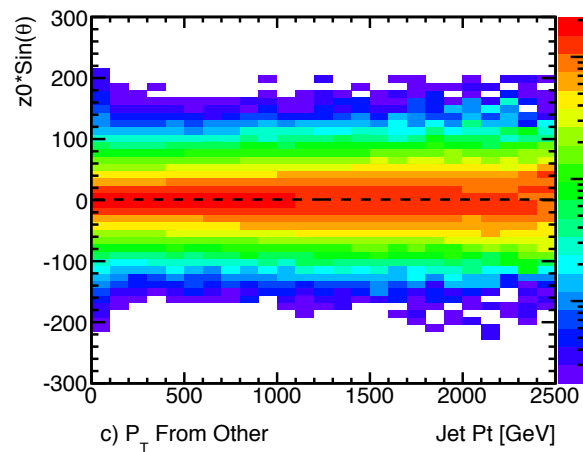
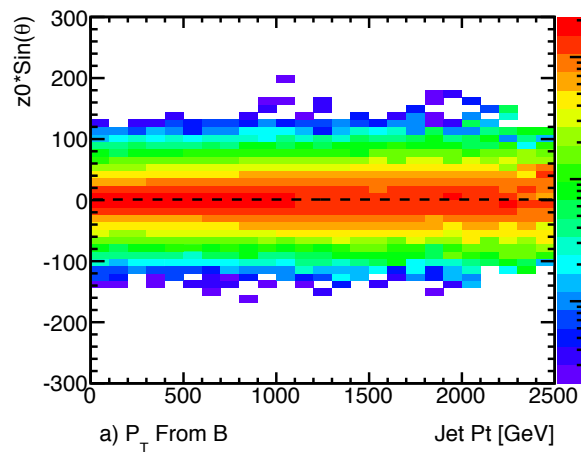


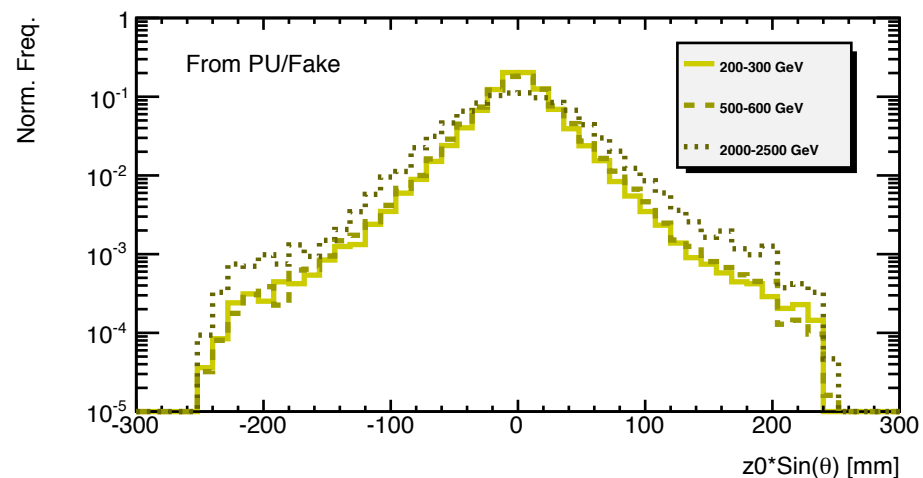
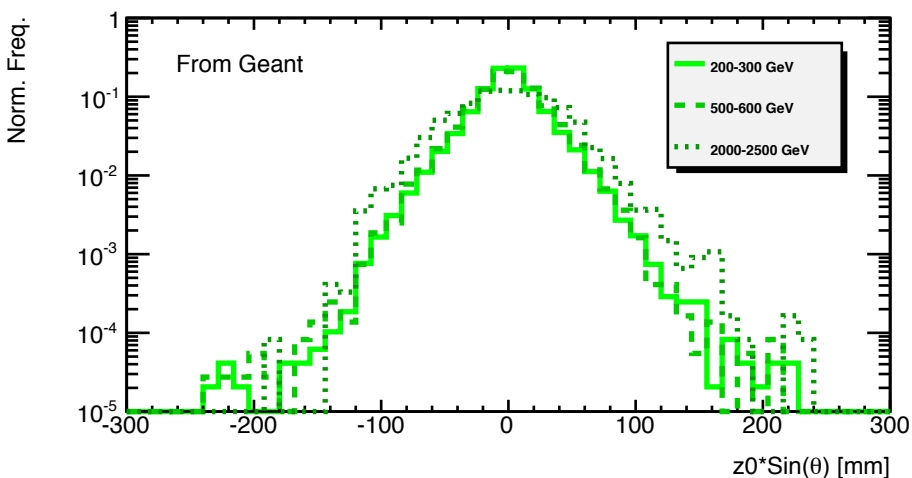
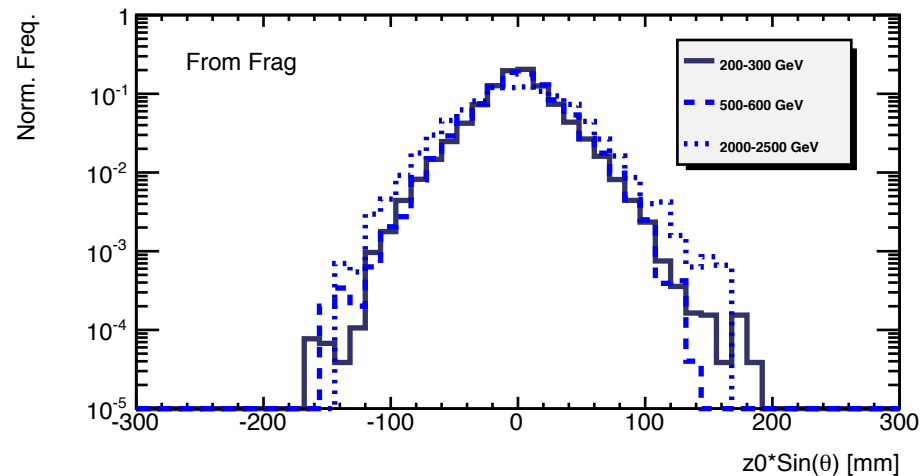
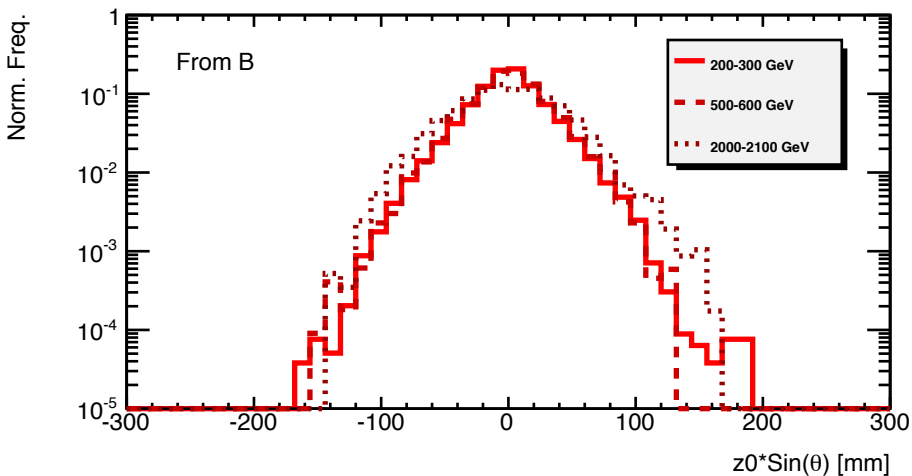


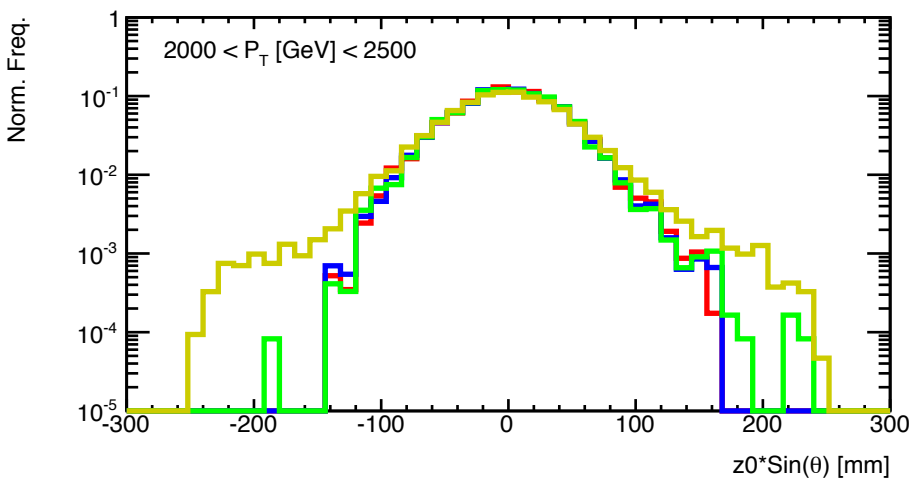
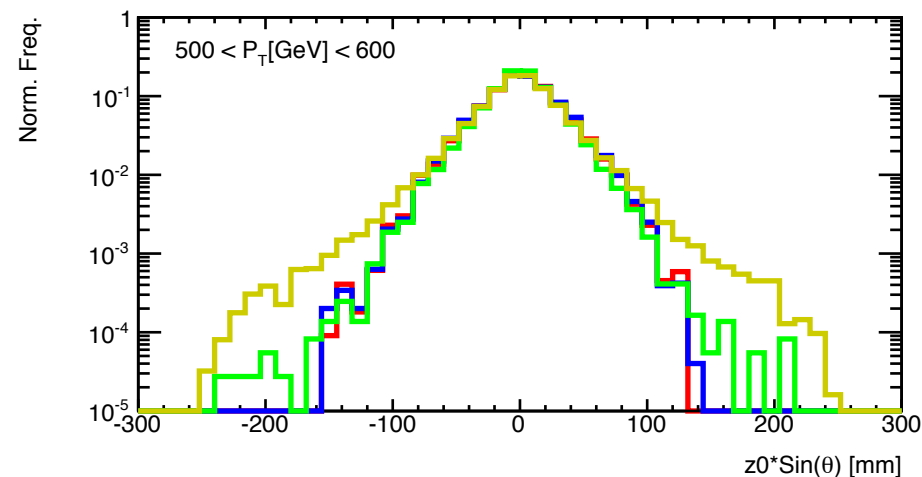
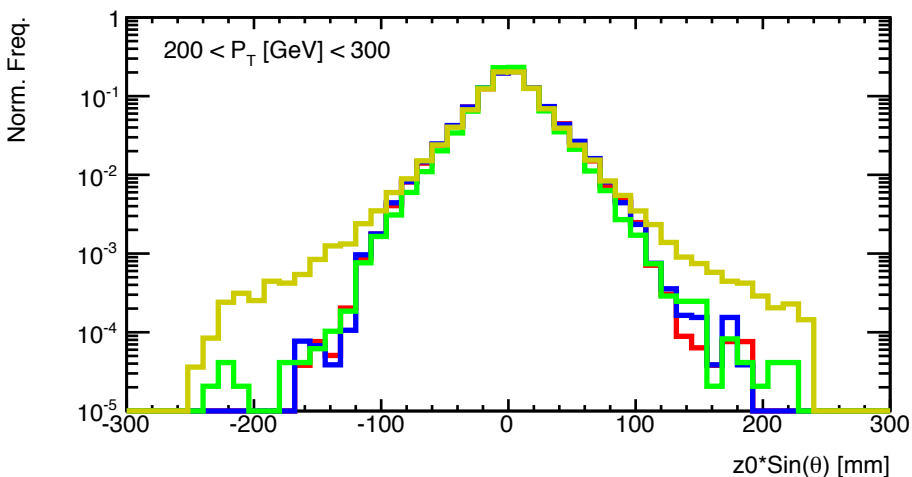
- From B
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- From PuFake



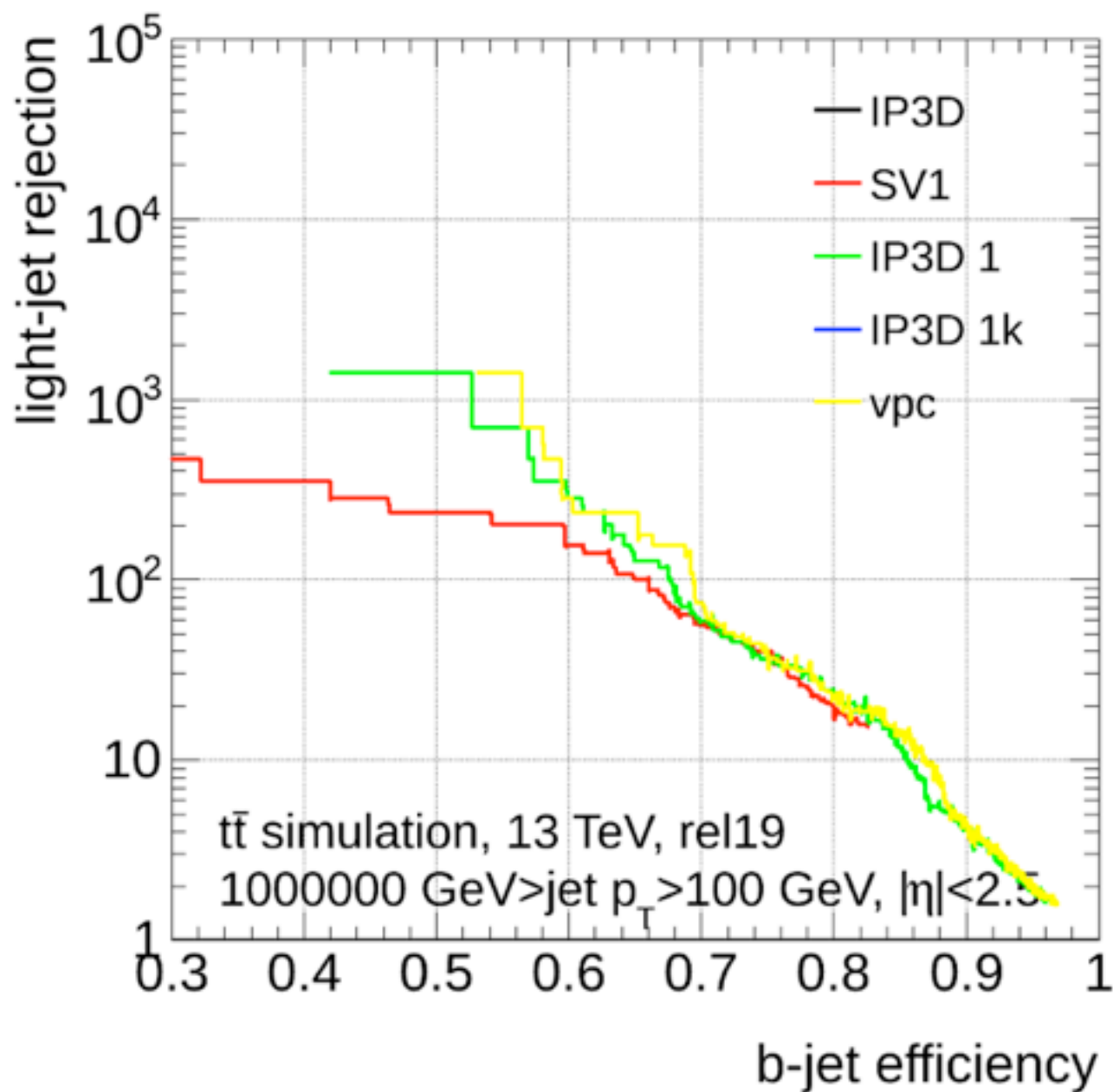








— From B
— From Frag
— From Geant
— From PuFake



Back Up!

- Consider one P_T bin: 2300-2400 GeV
- Look at the raw number of tracks that pass different cuts. Does this make sense?

	No Cut	IP3D Cut	IP3D+VPC1 Cut	IP3D+VPC2 Cut
All	16,589	12,239	7,099	8,880
From Geant	1,979	658	207	336
From PuFake	3,556	1,352	750	855
From Frag	10,075	9,527	5,499	7,008
From B	979	702	643	681
Frac				
From Geant	0.119	0.054	0.029	0.038
From PuFake	0.214	0.110	0.106	0.096
From Frag	0.607	0.778	0.775	0.789
From B	0.059	0.057	0.091	0.077
Eff				
From Geant		0.332	0.105	0.170
From PuFake		0.380	0.211	0.240
From Frag		0.946	0.546	0.696
From B		0.717	0.657	0.696

