
$K^* \rightarrow K_s \pi^+$ and little bit more at OKA

V. Kurshetsov
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Kstar estimates (V. Molchanov)

$K + N \rightarrow K^* + N$ (Primakoff and coherent reaction)

Primakoff narrow $K^*(890)$ production assuming $|F_c| = 1$

$L(\text{Cu}) = 0.0122 \text{ b}^{-1}$ (10% X_0); our 2mm = 14% X_0 .

$G(K^* \rightarrow K + \text{Gamma}) = 50 \text{ keV}$

(A,Z)	max q^2t [GeV ²]	Sigma(prim) microb	Prob[10% X_0]
Cu	0.001	31.59	0.39×10^{-6}

For $K^* \rightarrow K_s \pi^+$, $K_s \rightarrow \pi^+ \pi^-$

$$\text{BR} = \frac{N^{0.9} \cdot 1.4 \cdot 0.39 \cdot 10^{-6} \cdot (2/3) \cdot (1/2) \cdot (0.7)}{N^{0.1}} \cdot \frac{\text{eff}(K^*)}{\text{eff}(K3\pi)} = 1.15 \cdot 10^{-6} \cdot \frac{\text{eff}(K^*)}{\text{eff}(K3\pi)}$$

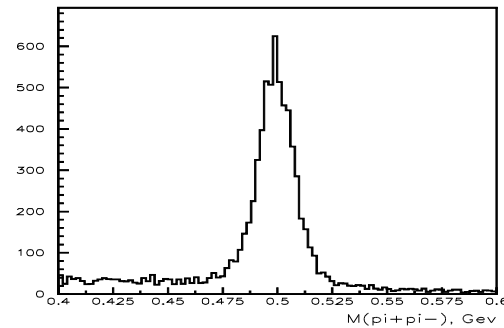
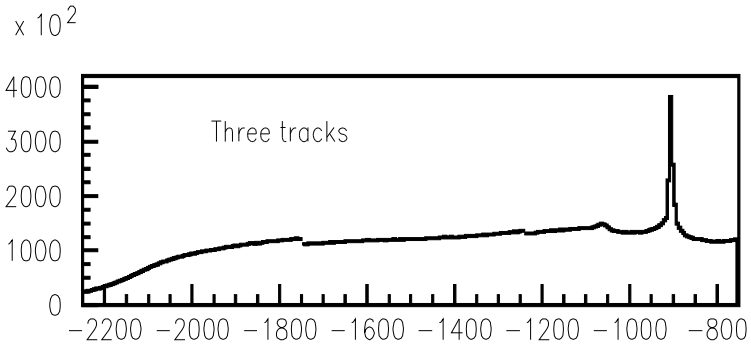
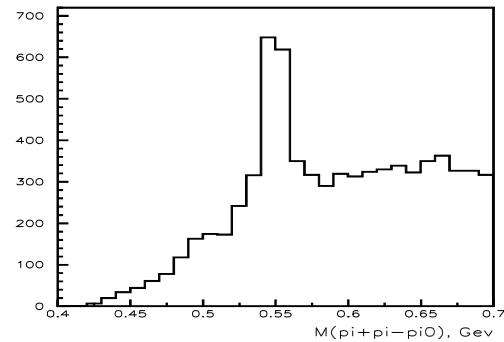
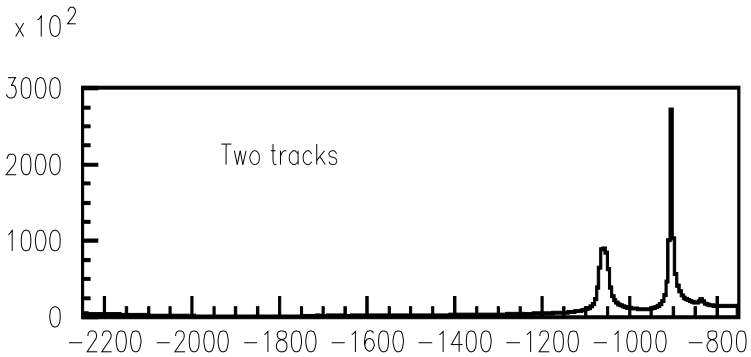
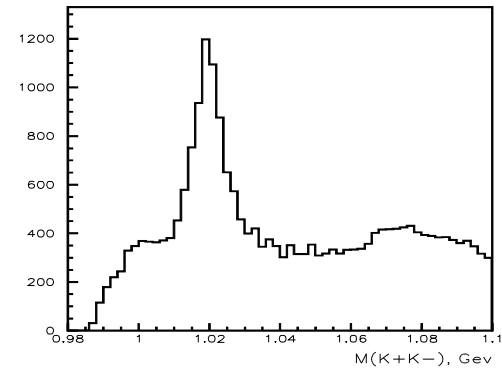
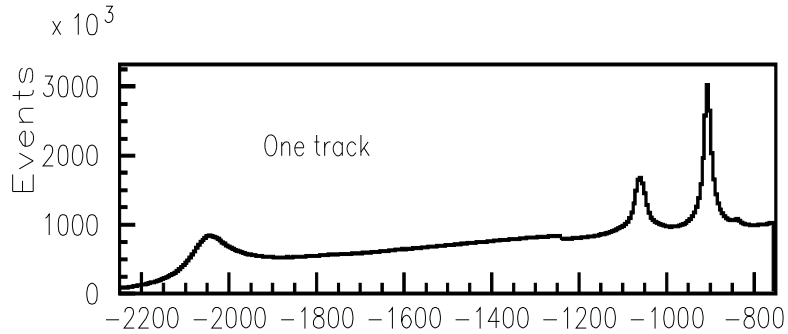
OKA Statistics (2010-2013)

	R10 Nov2010	R12 Nov2011	R14 Nov2012	R15 APR2013	Total
Beam, GeV/c	12.5 +17.7	17.7	17.7 +12.5	17.7	-
Live Kaons , 10E9	6.2	5.1	17.4	12.2	40.9
Gb on tape	1809	1250	3700	2200	8950
Events on tape , 10E9	1.2	0.8	2.8	1.7	6.5
K2pi, 10E6	15.2	15.5	61	42	134
Ke3, 10E6	2.5	2.0	8.1	~5	~17

ISTRA+ : Ke3 0.92

KMN : Ke3 1.1

Decay/Interaction Vertex



Z_{vtx} , cm

if(nbeam.ne.1) go to 999

if(.not.BTEST(TR_STATUS(idb(1)), TR_V_P)) go to 999

if(.not.BTEST(tr_status(idb(1)),TR_V_C)) go to 999

c Only beam track with good momentum

if(abs(pbeam-mbeam(eid_run)).gt.sbeam(eid_run)) goto 999

c Offline cuts on amplitude in C1 and C2

if(c1.gt.150.) go to 999

if(c2.lt.20.) go to 999

c Three secondary tracks event

if(nsec.ne.3) go to 999

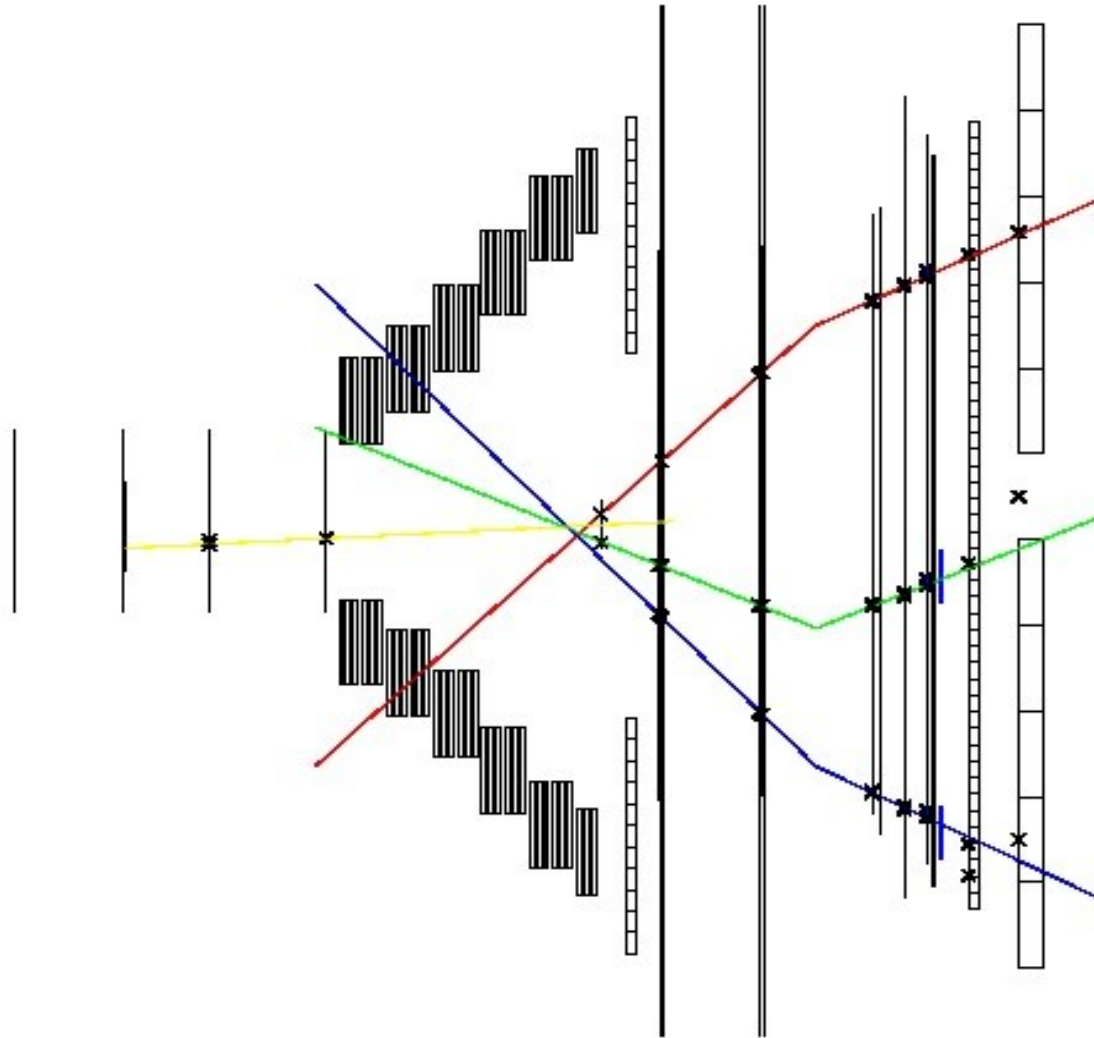
if(isign(1)+isign(2)+isign(3).ne.1) go to 999

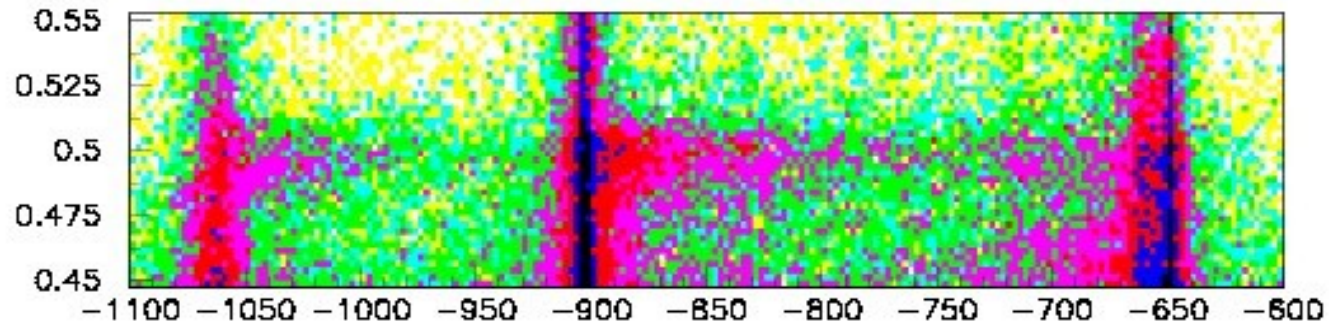
if(.not.BTEST(tr_status(ids(1)),TR_V_C)) go to 999

if(.not.BTEST(tr_status(ids(2)),TR_V_C)) go to 999

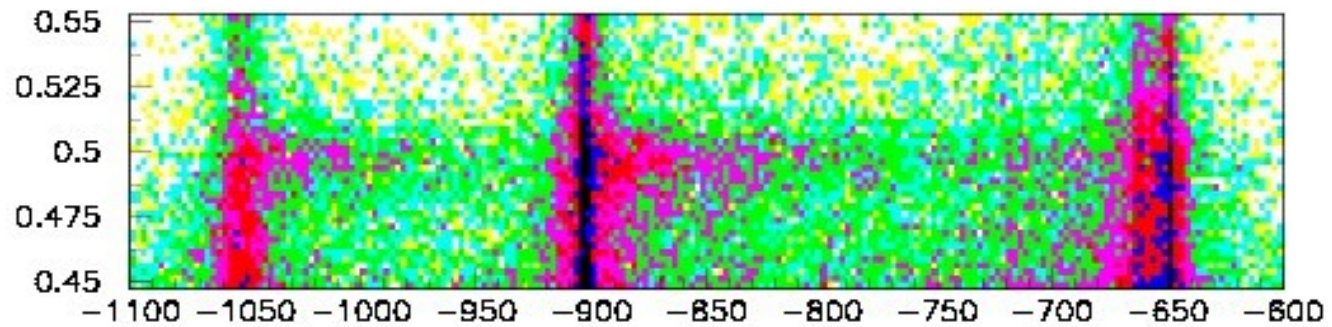
if(.not.BTEST(tr_status(ids(3)),TR_V_C)) go to 999

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if(vtx12(3).ge.ztgt12+3*stgt12.and.vtx12(3).le.-930.) then
  if(abs(real(z12(5))-0.498).le.3*0.009) then
    if(del12.le.4.) then
      if(abs(de).le.1.1) then
        if(abs(vtx3b(3)-ztgt12).le.3*stgt12) then
          if(gm_etot(1).le.0.05) then
            if(gm_etot(4).le.0.05) then
              if(nele.eq.0) then
                if(abs(dby).gt.1..and.abs(day).gt.0.0015) then
                  if(abs(dby).gt.1..and.abs(day).gt.0.0015) then
                    if(vtx12(3)-vtx3b(3).gt.30.) the
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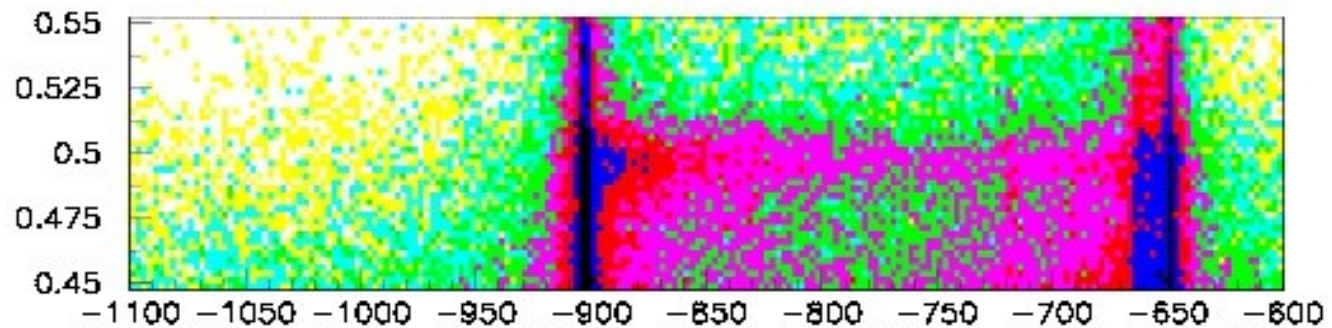




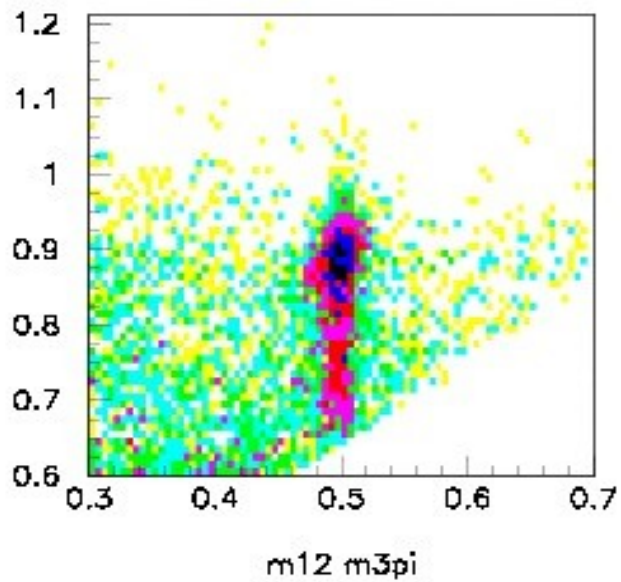
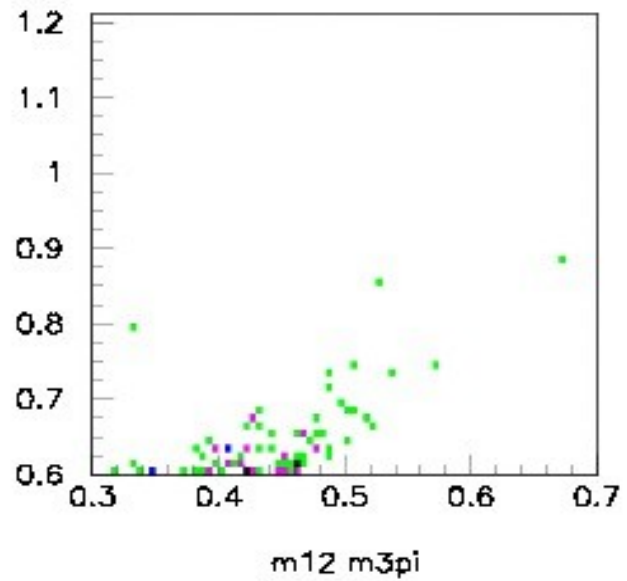
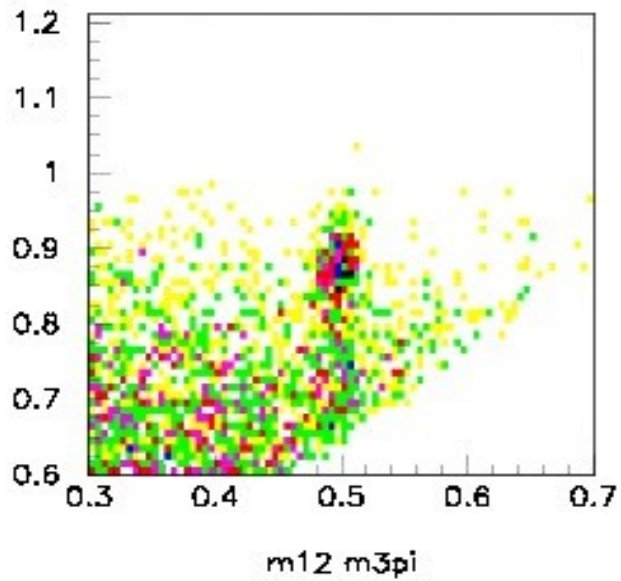
m2pi 1 3

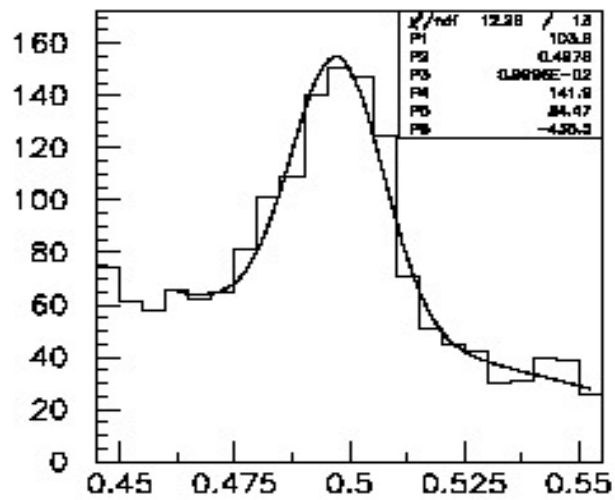


m2pi 1 3

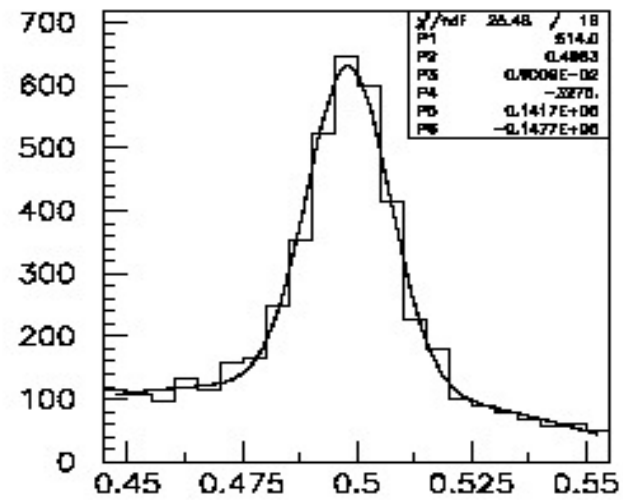


m2pi 1 3

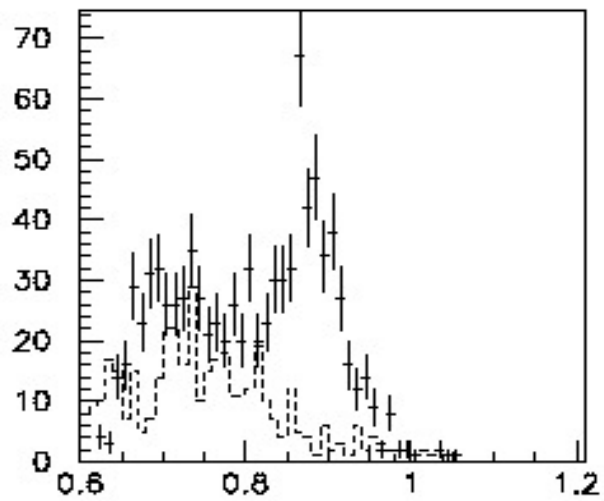




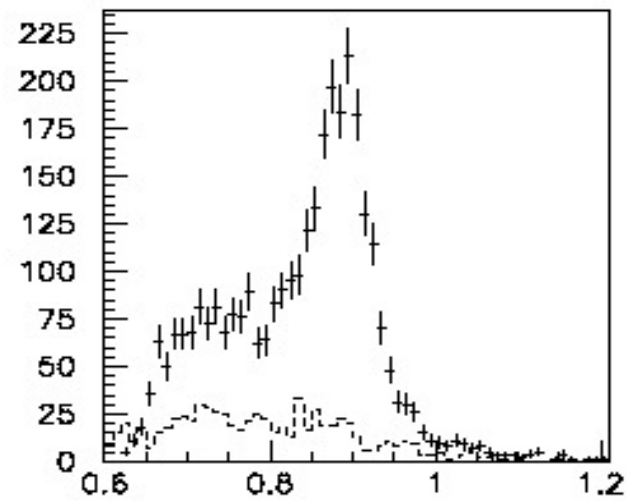
95.PROX



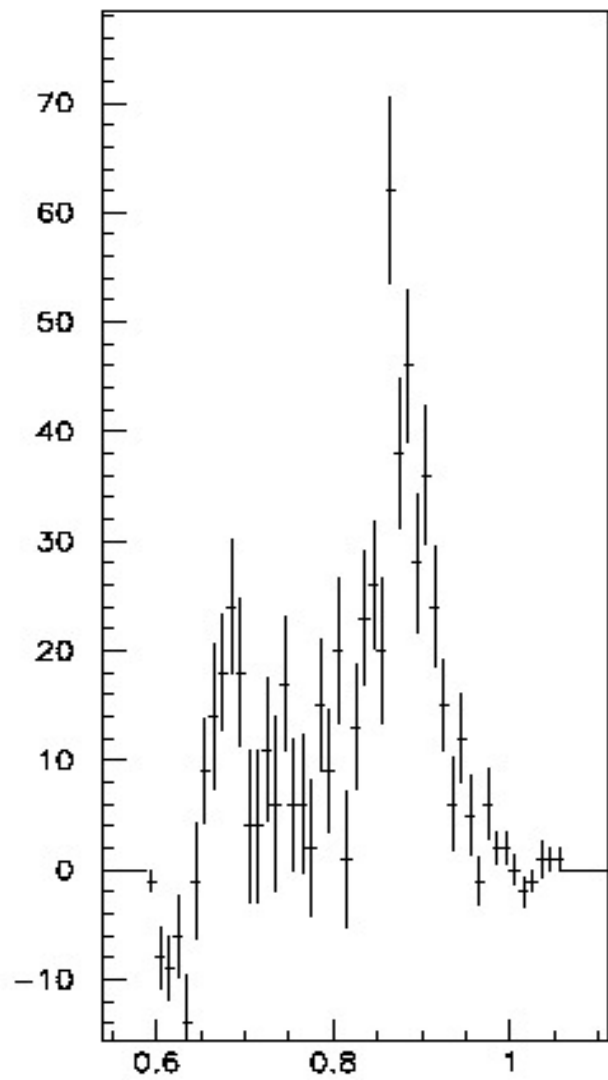
96.PROX



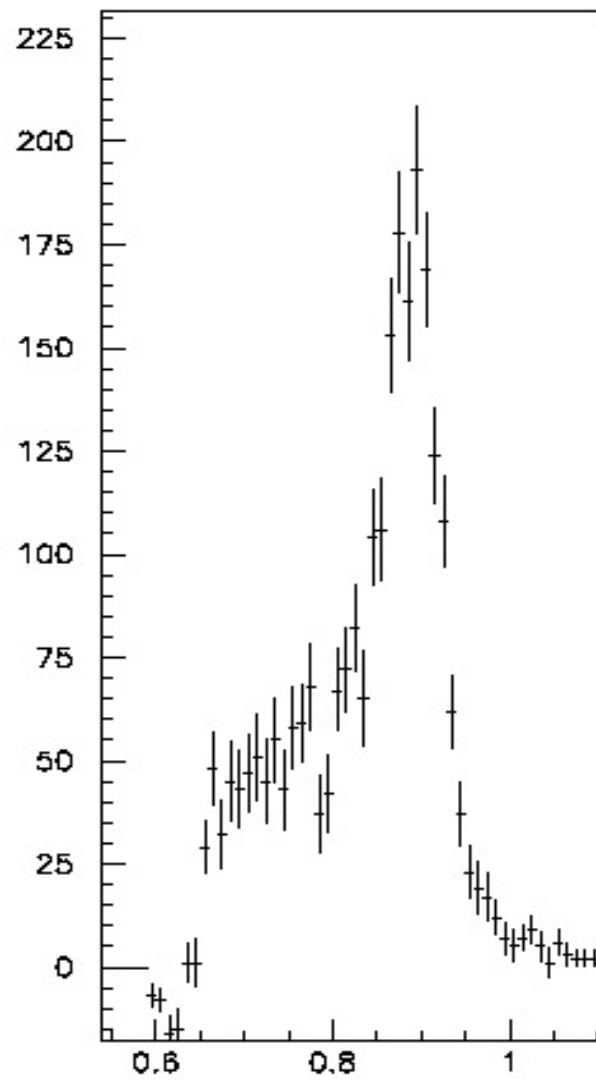
95.BANY.1



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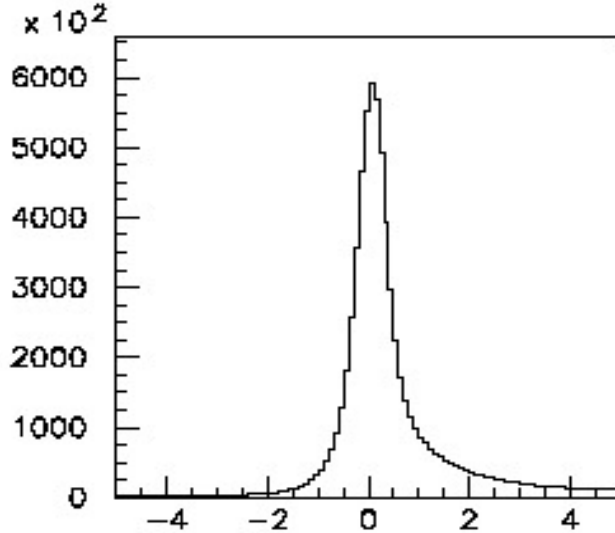


95.BANY.1

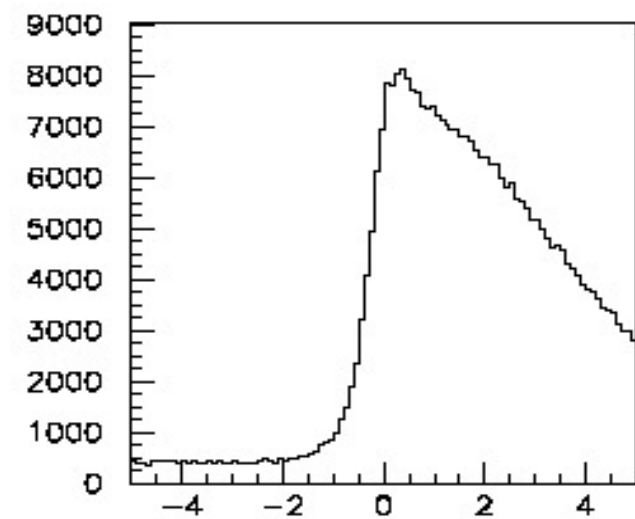


96.BANY.1

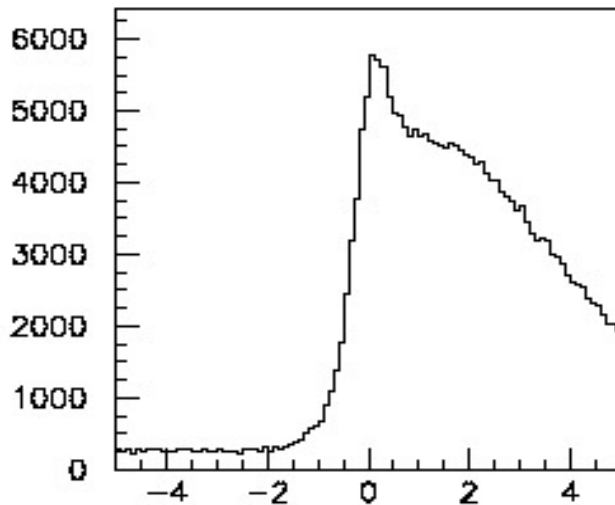
Let us go back and study background



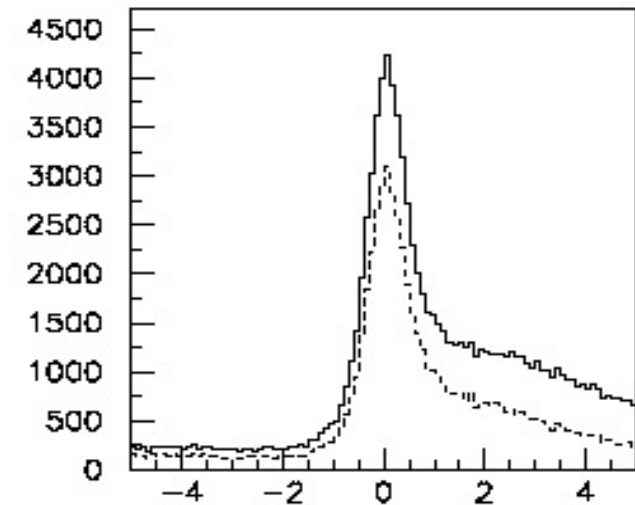
de 3pi



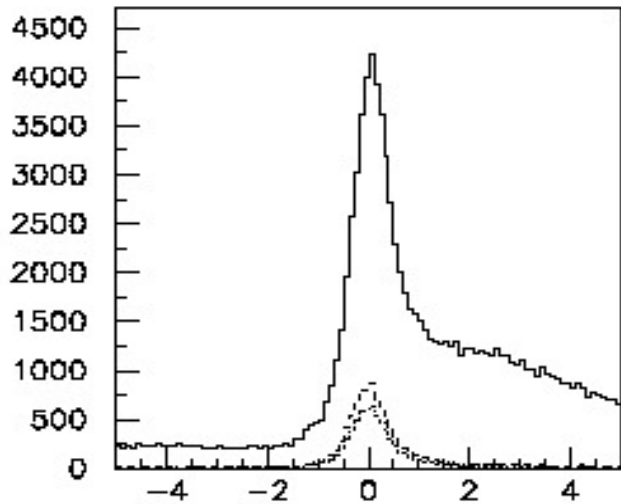
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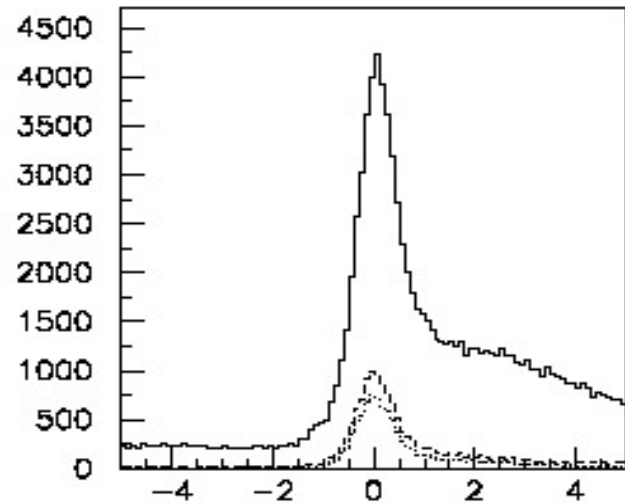
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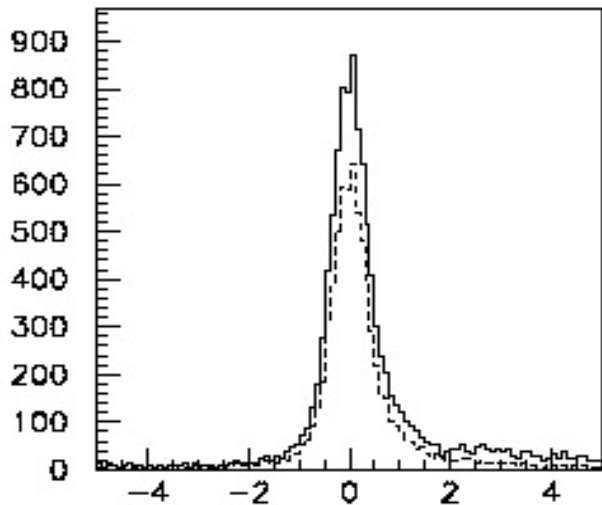
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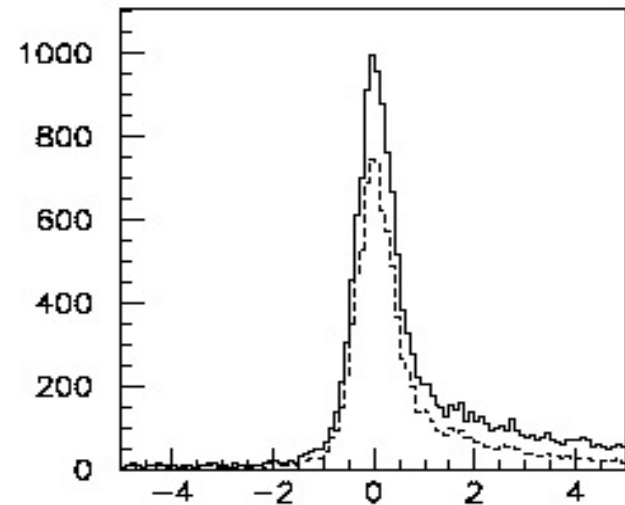
de 3π



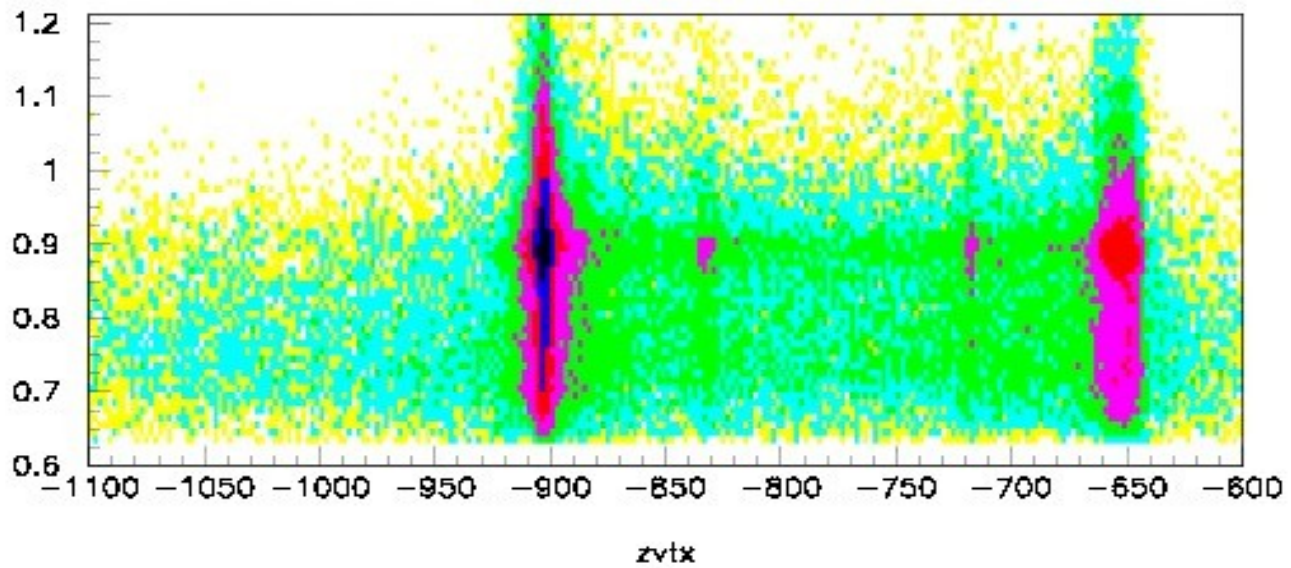
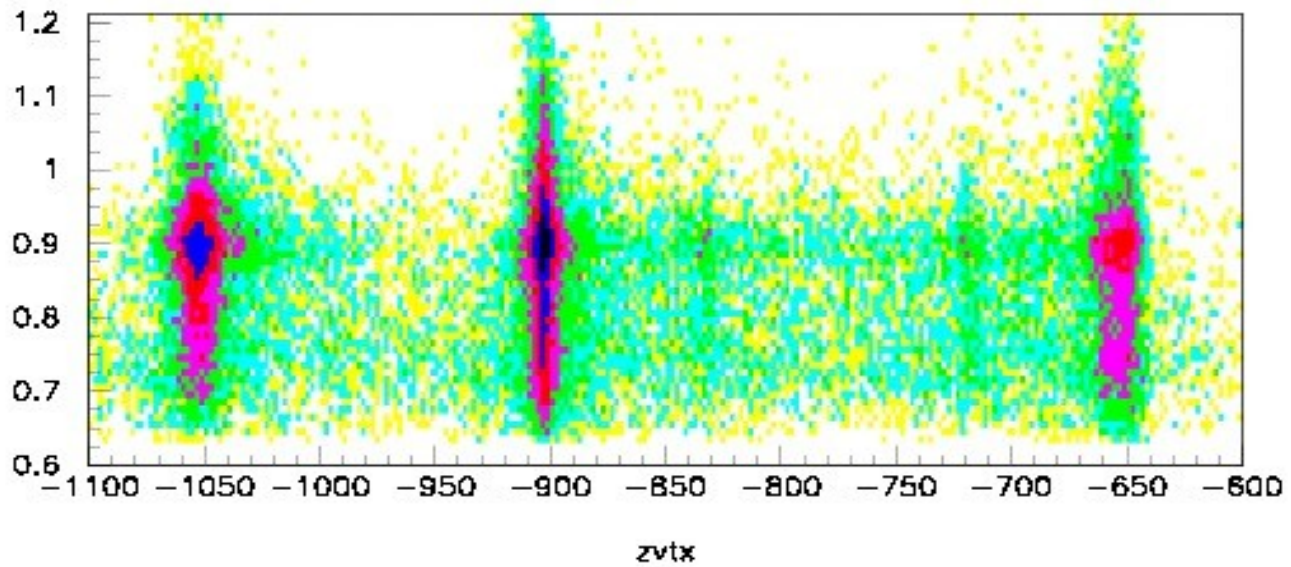
de 3π

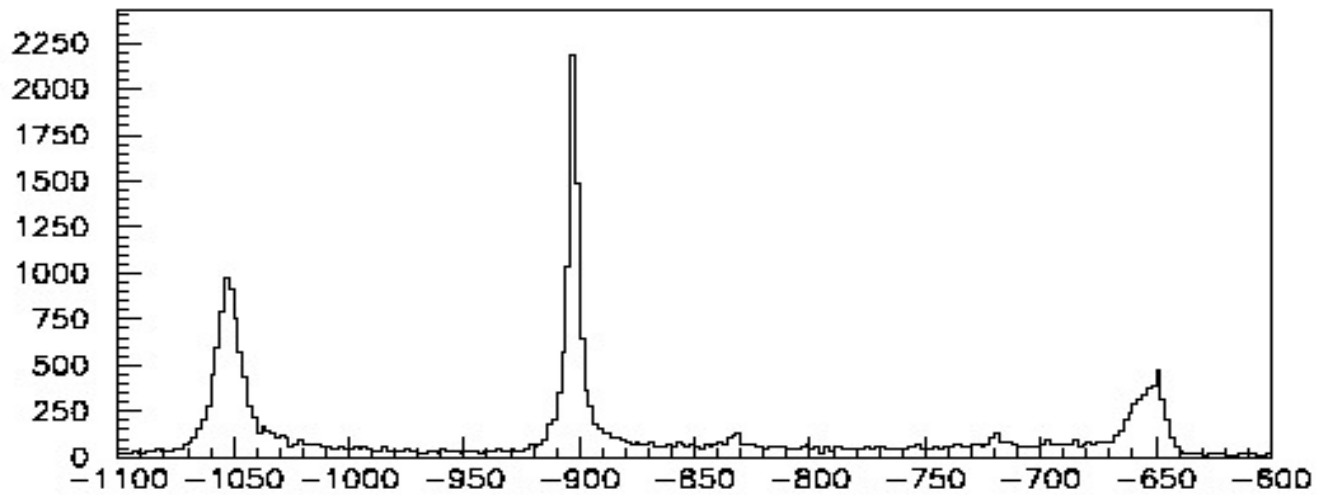


de 3π

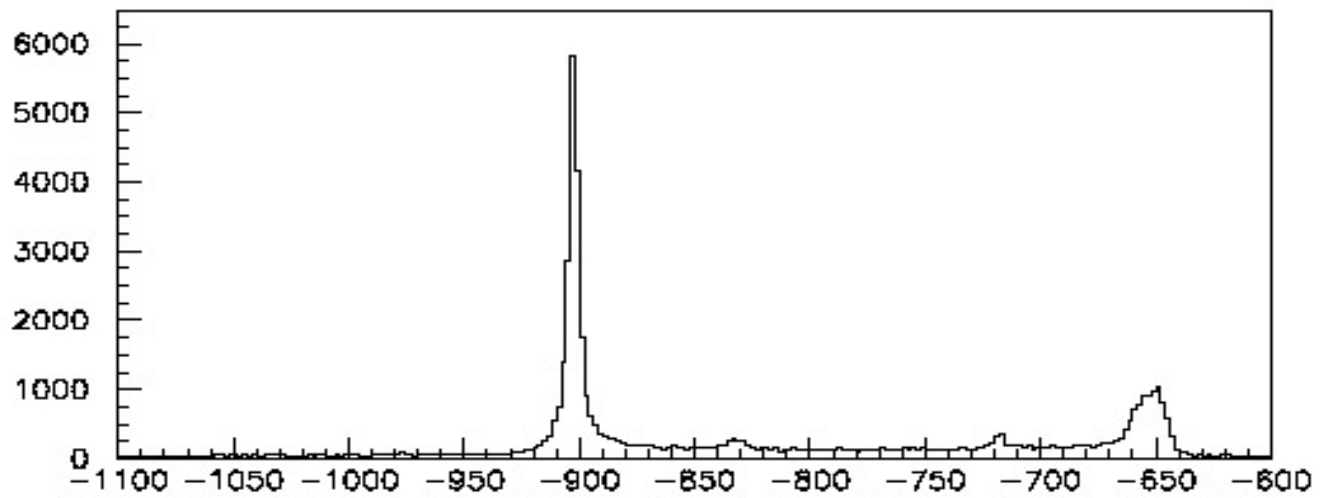


de 3π

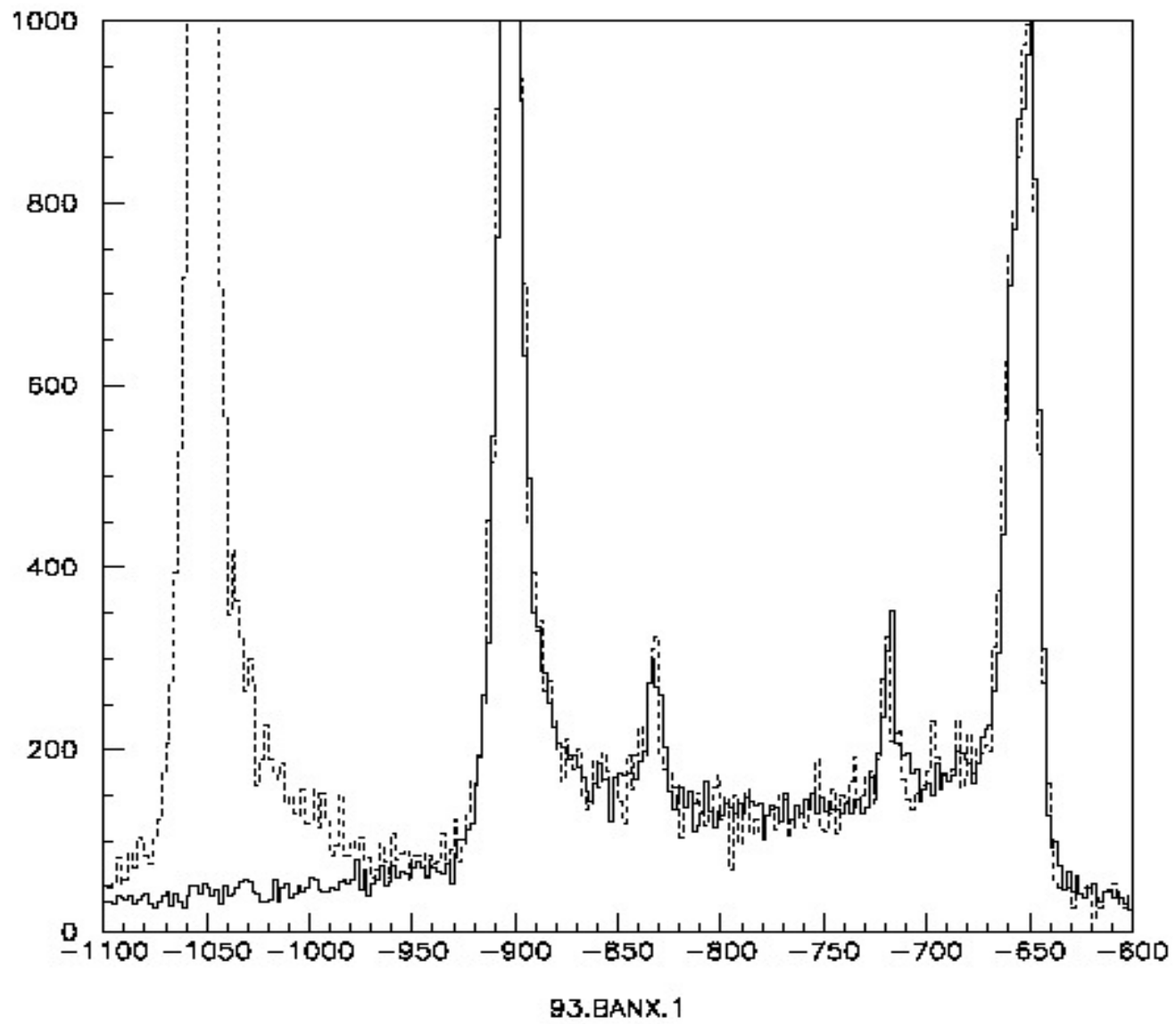


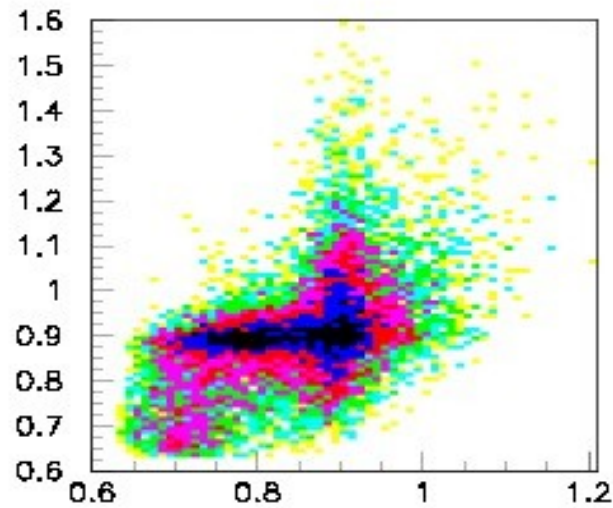


83.BANX.1

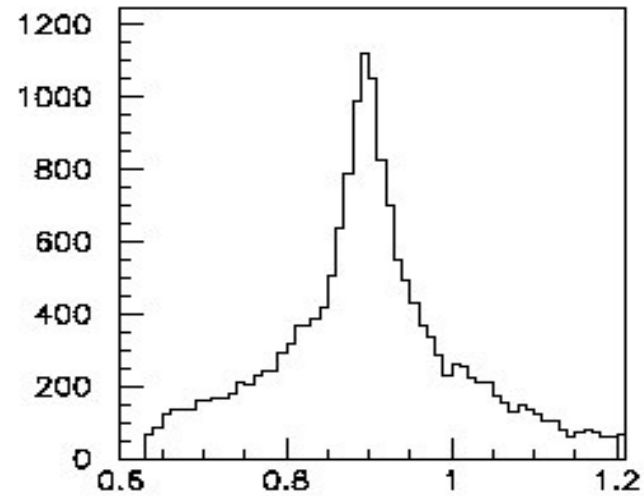


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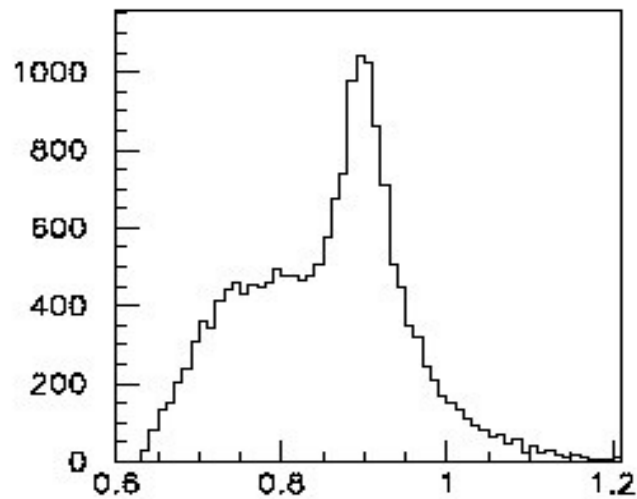




m13k m12k



11135.PROY



11135.PROX

K+ N to K+pi-pi+ N
 (K+ N to K*0 pi+ N)
 Diffraction, 0- to 1+

Kpipi system

[1] G.W.Brandenburg et al, Phys. Rev. Lett. 36(1976) 703, 706; Nucl. Phys. B127(1977) 509

K^{-/+} p at 13 GeV/c [1] ~ 138000 events in total (SLAC, RF beam)

[2] C.Daum et al., Nucl. Phys. B187(1981) p.1, and ref. therein;

K⁻p at 63 GeV/c [2] ~ 191000 events (CERN, ACCMOR)

A study of the reaction $K^-N \rightarrow (K^- \pi^+ \pi^-)N$ at 28 GeV/c (Be target)

Nikolaenko (VES), IHEP 2001-171, ~ 300 000 events, unpublished

Analysis of diffractive dissociation of K⁻ into K⁻π⁺π⁻ on a liquid hydrogen target at the COMPASS, Jasinski, CERN-THESIS-2012-191 , unpublished. About 270 000 events

Summary and outlook

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A long way to to go ...