

Shifts and trips

worker shifts:

leader shifts:

- Next round of shifts
 - September 16-19
 - October 14-17
 - Hotel:
 - Flight:
- NSTAR 2022 (Mike)
 - October 16-22
 - Hotel:
 - Flight:
 - Registration:
 - Conference fees:
 - Permission from Unit Head:
 - Permission from Dean:

Brandon Brandon Booked Booked?

Booked Need to book Registration in progress Need to pay Obtained Obtained



Poly lab temperatures



• Facilities management has been contacted





Rotation = 0°





Rotation = 90°





 $f(x,y) = \int p(s,\theta) * h(s) \Big|_{s=x\cos\theta + y\sin\theta} d\theta$



$$f(x,y) = \int p(s,\theta) * h(s) \Big|_{s=x\cos\theta + y\sin\theta} d\theta$$

Intensity at the detector plane measured along direction s for a fixed angle θ



Convolution

$$f(x,y) = \int p(s,\theta) * h(s) \Big|_{s=x \cos \theta + y \sin \theta} d\theta$$

Intensity at the detector plane measured along direction s for a fixed angle θ



Convolution

$$f(x,y) = \int p(s,\theta) * h(s) \Big|_{s=x \cos \theta + y \sin \theta} d\theta$$
Ramp filter
Intensity at the
detector plane
measured along
direction *s* for a
fixed angle θ







$$f(x,y) = \int p(s,\theta) * h(s) \Big|_{s=x\cos\theta + y\sin\theta} d\theta$$

~



Tomography: More complicated case

This time using solid cuboid and hollow cylinder.





Tomography: More complicated case Sinograph



¥ASU

Tomography: More complicated case

Without h(s) convolution



Tomography: More complicated case

Without h(s) convolution



With h(s) convolution



- To use prebuilt tomographic reconstruction software (TomoPy) we need to convert data to the hdf5 file format
- Alan has been successful in converting the ROOT data to hdf5 $\textcircled{\circ}$



Original box sinograph converted by Alan to hdf5 and viewed by HDFView

data at /exchange/ [myOutFile.h5 in /home/dugger/Downloads/.]	
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	1.57E1
	3.15E1
	4.72E1
	6.29E1
	7.86E1
	9.44E1
	1.10E2
	1.26E2
	1.42E2



Image

(0,0)

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Original box sinograph converted by Alan to hdf5 and viewed by HDFView

Just need to add in dummy dimension for slice number

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/exchange/ [myOutFile.h5 in /home/dugger/Downloads/.

0.00E0 1.57E1 3.15E1 4.72E1

6.29E1 7.86E1

Image

(0.0)

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Almost there!

oh 		→					0.00E0 1.57E1 3.15E1 4.72E1 6.29E1 7.86E1 9.44E1 1.10E2 1.26E2 1.42E2
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/exchange/ [myOutFile.h5 in /home/dugger/Downloads/.

TPOL

- Finished processing Spring 2020 data
- Need to package up the script and send to collaboration



Polarizations for spring 2020 (AKA 2019-11) all batches



Polarization values for E_gamma between 8.0 and 8.6 GeV

Beam orientation	Polarization
0 degrees:	0.3525 +/- 0.0077
45 degrees:	0.3535 +/- 0.0066
90 degrees:	0.3536 +/- 0.0074
135 degrees:	0.3721 +/- 0.0066





 $K^+K^-\pi^0$

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http://meson.hldsite.com/presentations/dugger/kkpi22-8-30.pdf

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 - Speculated that the production mechanism was s-channel
- We should be able to distinguish the J=1 nature through PWA
- Will start by assuming *t*-channel prior to searching for *s*-channel contributions (code is currently setup for t-channel).
 VASU

• Convenient to treat potential 3-body decay as two 2-body decays



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- For the two 2-bodies:
 - One body is single meson
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K*(700)

$$I(J^P) = \frac{1}{2}(0^+)$$

also known as κ ; was $K_0^*(800)$

See the review on "Scalar Mesons below 1 GeV." Mass (T-Matrix Pole \sqrt{s}) = (630–730) – *i* (260–340) MeV Mass (Breit-Wigner) = 845 ± 17 MeV Full width (Breit-Wigner) = 468 ± 30 MeV

K [*] ₀ (700) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
Κπ	100 %	256
K*(892)	$I(J^P) = \frac{1}{2}(1^-)$	
Mass (T-Matrix	$(\text{Pole }\sqrt{s})=(890\pm14)-i$	(26 \pm 6) MeV
<i>K</i> *(892) [±] hadı	roproduced mass $m = 891.67$	\pm 0.26 MeV
$\mathit{K}^*($ 892 $)^\pm$ in $ au$	decays mass $m = 895.5 \pm 0.8$	3 MeV
K*(892) ⁰ mas	s $m = 895.55 \pm 0.20$ MeV (S = 1.7)
$K^*(892)^{\pm}$ had	roproduced full width $\Gamma = 51.4$	1 ± 0.8 MeV
$K^*(892)^{\pm}$ in τ	decays full width $\Gamma = 46.2 \pm$	1.3 MeV
<i>K</i> *(892) ⁰ full	width $\Gamma=47.3\pm0.5~\text{MeV}$	(S = 1.9)
		p
K*(892) DECAY MODES	Fraction (Γ _i /Γ) C	onfidence level (MeV/c)
Κπ	$\sim~100$ %	289

	-		, .		
$\zeta^0 \gamma$	(2.46 ± 0.21	$) imes 10^{-3}$		307
$\zeta^{\pm}\gamma$	(9.8 ±0.9) × 10 ⁻⁴		309
$\zeta \pi \pi$	<	7	$\times 10^{-4}$	95%	223



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K*(892)	$I(J^P) = \frac{1}{2}(1^-)$	
Mass (1-Matrix P	ole \sqrt{s}) = (890 ± 14) - <i>i</i> (26	$b \pm 6$) MeV
$K^*(892)^{\pm}$ hadrop	roduced mass $m = 891.67 \pm 0$	0.26 MeV
$K^*(892)^+$ in τ de	cays mass $m = 895.5 \pm 0.8$ N	/leV
$K^*(892)^\circ$ mass n $K^*(802)^\pm$ hadron	$n = 895.55 \pm 0.20$ MeV (S = reduced full width $\Gamma = E1.4 \pm 1.00$	= 1.7
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φ(1020)

$$\label{eq:mass_mass_star} \begin{split} \text{Mass}~m &= 1019.461 \pm 0.016~\text{MeV} \\ \text{Full width}~\Gamma &= 4.249 \pm 0.013~\text{MeV} \quad (\text{S} = 1.1) \end{split}$$







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IG(JPC







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