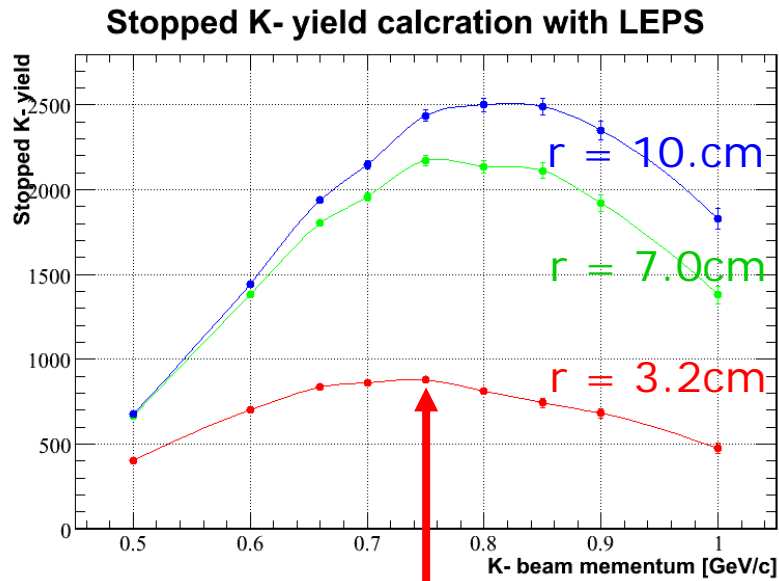


# Stopped K- yield estimation @ K1.8BR

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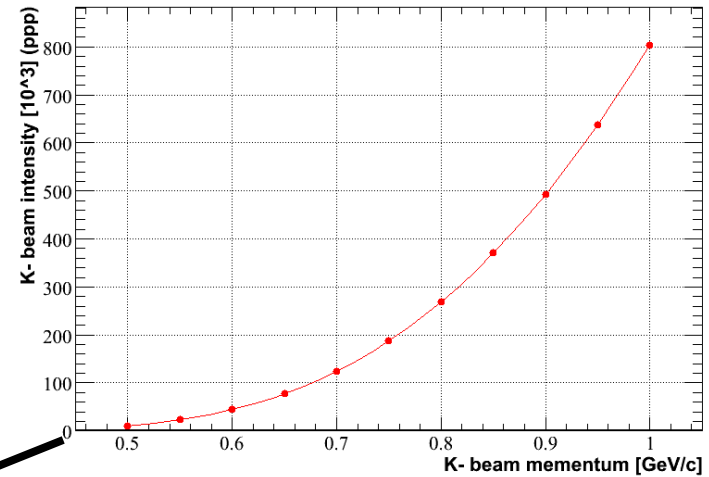
- Simulation code : LEPS
- Incident K- beam
  - Generated at  $z = -150\text{cm}$  ( $z=0$ : final focus point)
  - Momentum bite :  $\pm 2.5\%$
  - Incident K- beam distribution @ final focus point (K1.8BR)
    - $\sigma=0.6\text{cm}(x)$  and  $0.3\text{cm}(y)$  (assumed Gaussian shape)
    - $\sigma=33\text{mrad}(x')$  and  $2.5\text{mrad}(y')$  (Gaussian) ... ref. Iio-san's report
    - $\rightarrow$  from which the distribution at  $z=-150\text{cm}$  has been estimated.
- (cf. K5 beamline :
  - Production target:  $1\text{cm}(H) \times 0.6\text{cm}(V)$ ,
  - Magnification= $2.2(H), 1.1(V)$ ,
  - Divergence= $\pm 130\text{mrad}(H), \pm 13\text{mrad}(V)$  )
- Target
  - Liq.  $\text{He}^3$  ( $0.08 \text{ g/cm}^3$ )
  - Shape : Cylinder
  - Size :  $L=15\text{cm}$ ,  $r=3.2\text{cm}$ ,  $7.0\text{cm}$ ,  $10.0\text{cm}$

# Expected stopped K- yield @ K1.8BR

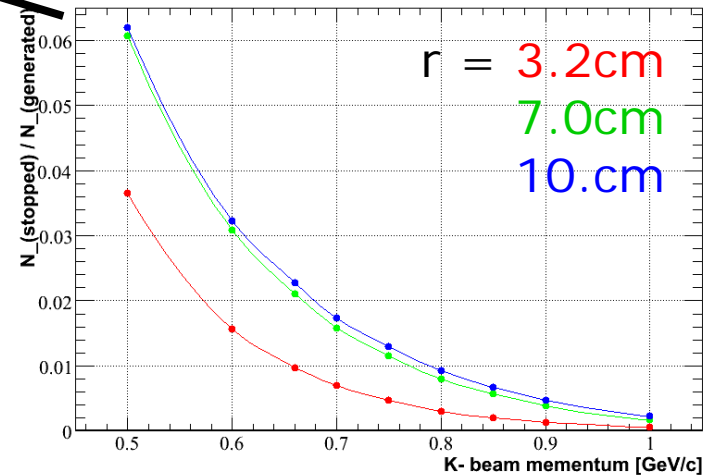


~900 stopped K- / spill  
@ 0.75 GeV/c

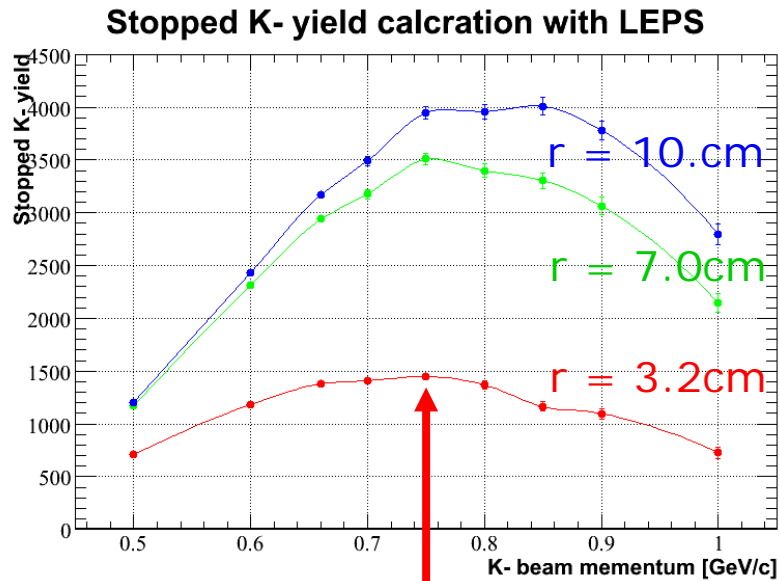
**K1.8BR (30[GeV], 9[μA], length:27.573[m], θ:6[deg])**



**Stopping ratio of K- beam (with LEPS)**

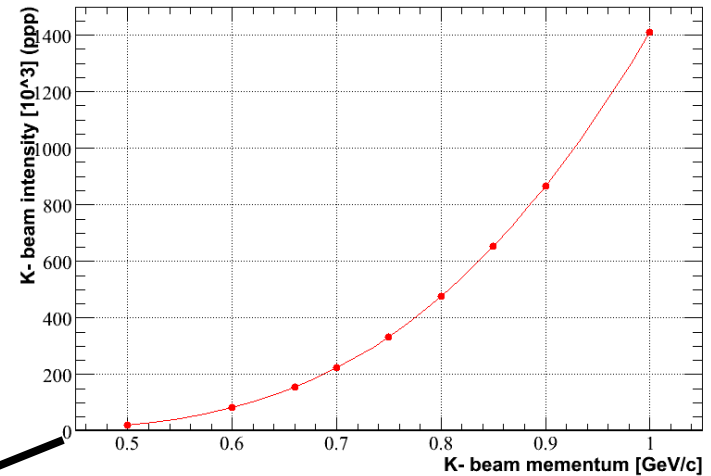


# Expected stopped K- yield @ K1.1

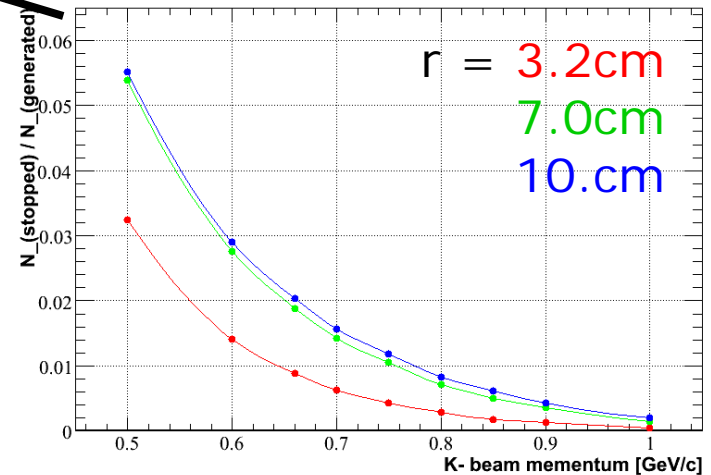


~1400 stopped K- / spill  
@ 0.75 GeV/c

**K1.1BR (30[GeV], 9[μA], length:27.085[m], θ:6[deg])**



**Stopping ratio of K- beam (with LEPS)**



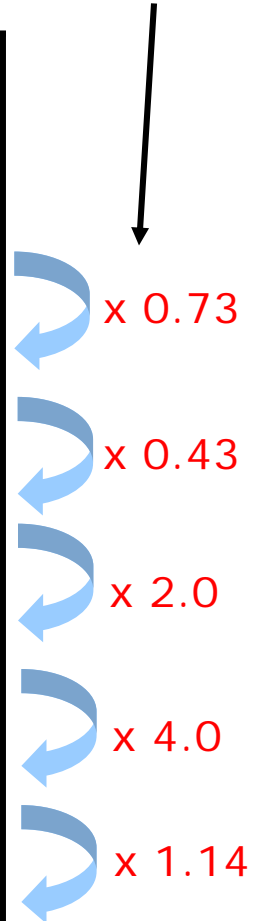
# Stopped K- yield calculation w/LEPS

$$\text{He4} \rightarrow \text{He3} : (4 / 3) * (0.08[\text{g}/\text{cm}^3] / 0.145[\text{g}/\text{cm}^3]) = 0.73 \text{倍}$$

K5

Incident beam (bite= +/-2.5%)			Target L=15cm	Stopping ratio [%]	K- yield (/spill)
momentum	distribution	Intensity			
660MeV/c	w/K5 beam emittance	20k	He4 r=10	1.519	304
660MeV/c	w/K5 beam emittance	20k	He3 r=10	1.115	223
660MeV/c	w/K5 beam emittance	20k	He3 r=3.2	0.4765	95
660MeV/c	<b>K1.8BR distribution</b>	20k	He3 r=3.2	0.9763	195
660MeV/c	K1.8BR distribution	<b>80k</b>	He3 r=3.2	0.9763	781
<b>750MeV/c</b>	K1.8BR distribution	<b>190k</b>	He3 r=3.2	0.4688	<b>891</b>

K1.8BR

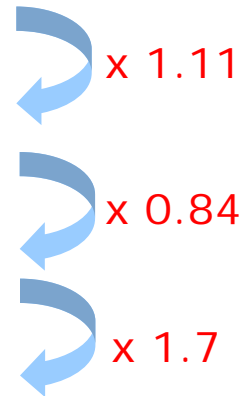


# Stopped K- yield calculation w/LEPS

K1.8BR

K1.1

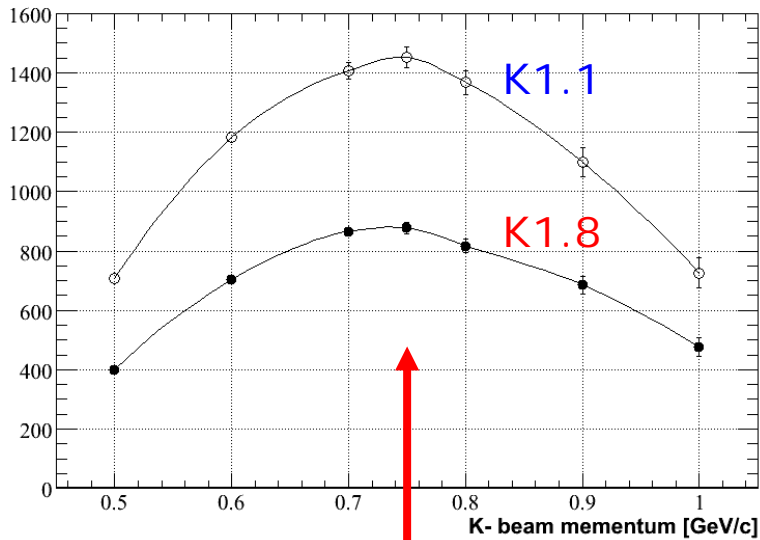
Incident beam				Stopping ratio [%]	K- yield (/spill)
momentum	distribution	bite	Intensity		
750MeV/c	K1.8BR distribution	2.5%	190k	0.4688	<b>891</b>
750MeV/c	<b>K1.1 distribution</b>	2.5%	190k	0.5183	935
750MeV/c	K1.1 distribution	<b>3.0%</b>	190k	0.4358	828
750MeV/c	K1.1 distribution	3.0%	<b>330k</b>	0.4358	<b>1438</b>



# Expected stopped K- yield @ K1.1

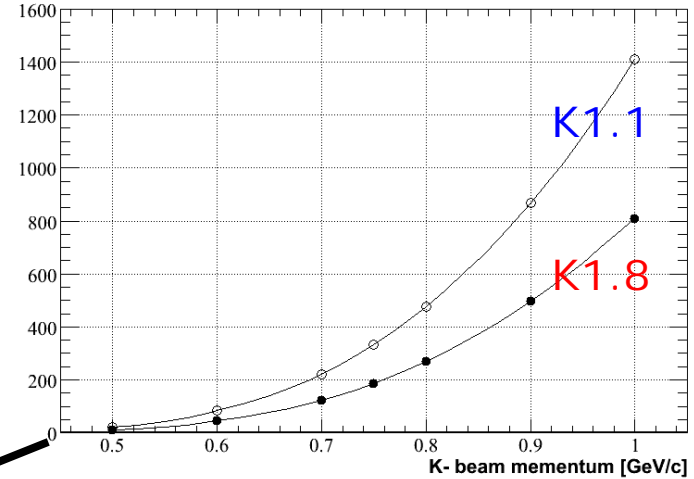
$r = 3.2\text{cm}$

Stopped K- yield calculation



~1400/~900 stopped K- / spill  
@ 0.75 GeV/c

K- beam intensity [ $10^3$ ] (ppp)



Stopping ratio of K- beam

