

# FIRST RESULTS AND DUAL RADIATOR RUNS

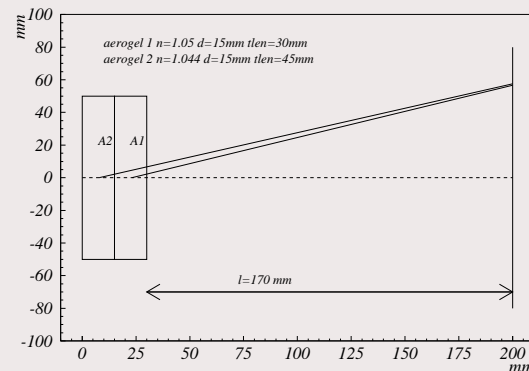
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Aerogel Rich beamtest review meeting

- ❖ Database
- ❖ Dual radiator- focusing type setup: First impressions



- ❖ Suggestions for further measurements



## Statistics of the recorded data

- ❖ Total number of recorded events: 1824709
- ❖ Average DAQ rate: 18.26 Hz
- ❖ Average tracking efficiency (at least one space point reconstructed): 0.92
- ❖ Average tracking efficiency (two space points reconstructed): 0.58
- ❖ Run information  
<http://www-f9.ijs.si/rok/aerorich/beamtest2004/run.html>
- ❖ Measured setups  
[http://www-f9.ijs.si/rok/aerorich/beamtest2004/run\\_aerogel.html](http://www-f9.ijs.si/rok/aerorich/beamtest2004/run_aerogel.html)
- ❖ Preliminary results for Hamamatsu H8500, Hamamatsu R5900-M16 and MCP Burle 85011  
[http://www-f9.ijs.si/rok/aerorich/beamtest2004/results\\_1.html](http://www-f9.ijs.si/rok/aerorich/beamtest2004/results_1.html)  
[http://www-f9.ijs.si/rok/aerorich/beamtest2004/results\\_2.html](http://www-f9.ijs.si/rok/aerorich/beamtest2004/results_2.html)  
[http://www-f9.ijs.si/rok/aerorich/beamtest2004/results\\_3.html](http://www-f9.ijs.si/rok/aerorich/beamtest2004/results_3.html)



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Location: [http://www-f9.ijs.si/~rok/aerorich/beamtest2004/run\\_aerogel.html](http://www-f9.ijs.si/~rok/aerorich/beamtest2004/run_aerogel.html) What's Related

### Aerorich Beamtest March 2004 at Pi2 PS-beamline at KEK

**Legend**

Run	Data usable	Data not usable	
Distance	nominal distance	Special distance used for this run	
Aerogel info	single refr. index radiator	Dual refr. index focusing type	Dual refr. index defocusing type

**Table of recorded data with aerogel information**

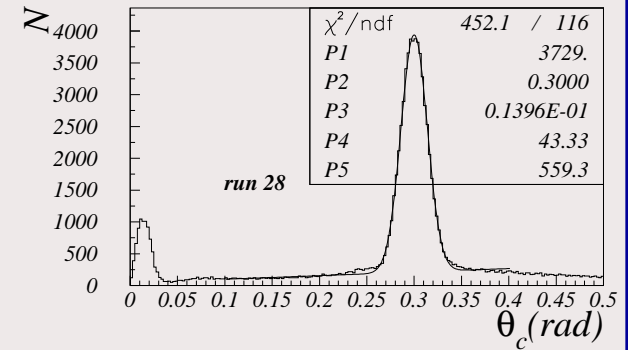
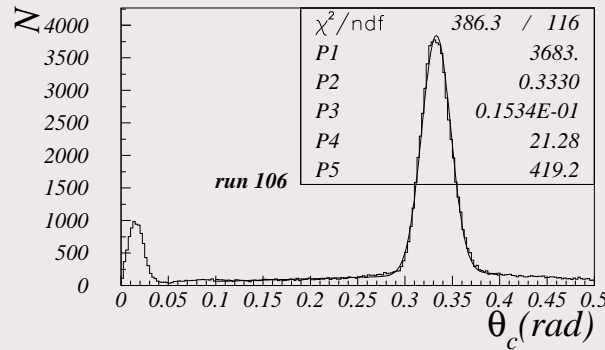
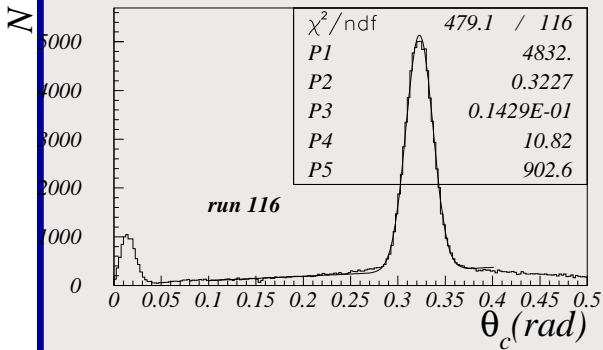
Run	Events	RICH1 Distance	RICH1 aerogel	Aerogel data [rind, thickness, trlenmm]	RICH2 Distance	RICH2 aerogel	Aerogel data [rind, thickness, trlenmm]	Comment
11	2154	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=1 usec
12	655	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=0.5 usec
13	2506	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=0.5 usec
14	2177	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=1.5 usec
15	2369	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=2 usec
16	2530	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=3 usec
17	2120	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=5 usec
18	3123	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=8 usec
19	2095	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=20 usec
20	2128	204	MD-2 + MD-3	[1.05622, d=10.5mm, tl=30.01 mm] [1.05622, d=10.0mm, tl=28.86 mm]	199	MD-6 + MD-9	[1.04698, d=10.2mm, tl=45.00 mm] [1.04645, d=10.5mm, tl=45.59 mm]	RICH1 delay=1.4 usec

100%



# Dual radiator - focusing type

Double radiator performance vs single radiators - more photons with comparable resolution!



Radiator	Run	n	d(mm)	trl(mm)	$N_{det}$	$\sigma_{\theta_c}$ (mrad)
MD-6+ MD-9+ MD-2+MD-3	116	1.04698	10.2	45.00	7.33	14.3
		1.04645	10.5	45.59		
		1.05622	10.5	30.01		
		1.05622	10.0	28.86		
MD-2+ MD-3	106	1.05622	10.5	30.01	6.15	15.3
		1.05622	10.0	28.86		
MD-6+ MD-9	28	1.04698	10.2	45.00	5.51	14.0
		1.04645	10.5	45.59		



## Measurements plan

Some suggestions for further measurements:

- ❖ detailed HV scan (in steps of 20V 4000 events per run)
- ❖ Measure photon yield of combinations of aerogels with different refractive index, i.e. focusing and defocusing setup
- ❖ measure angular dependence of the focusing and defocusing type setup
- ❖ measure momentum dependence of the focusing and defocusing type setup
- ❖ double radiator at  $p=+4\text{GeV}/c$
- ❖ high statistics run with single radiator