

INT Primary mirror water-washing. Measurements with SMS micro-Scan reflectometer  
 Washing carried out by Neil O'Mahony with help from Mansour Karami  
 Mirror had been exposed to rainfall on 21 Oct, resulting in large scale water/dust stains

Lambda 0.67  
 Incident An 25  
 BW Limits 1 0.01

Measurements from before washing

$\Theta_s \rightarrow$	0	50					
$\Phi_s \rightarrow$	0	180	REFL		RMS(Å)	"TIME"	"DATE"
1	1.48E-02	5.66E-03	0.78	omit	94.1	"11:57:28"	"11-24-1911"
2	1.46E-02	5.66E-03	0.771	omit	93.9	"11:57:33"	"11-24-1911"
3	1.30E-02	4.36E-03	0.814		87.5	"11:57:44"	"11-24-1911"
4	1.30E-02	4.39E-03	0.815		87.4	"11:57:50"	"11-24-1911"
5	1.54E-02	6.15E-03	0.8		94.4	"11:57:57"	"11-24-1911"
6	1.52E-02	6.14E-03	0.804		93.5	"11:58:02"	"11-24-1911"
7	1.47E-02	5.90E-03	0.802	omit	92.2	"11:58:10"	"11-24-1911"
8	9.58E-03	4.10E-03	0.825		73	"11:59:03"	"11-24-1911"
9	9.55E-03	4.10E-03	0.822		73	"11:59:09"	"11-24-1911"
10	1.96E-02	8.20E-03	0.781		107.5	"11:59:16"	"11-24-1911"
11	1.95E-02	8.16E-03	0.782		107.2	"11:59:22"	"11-24-1911"
12	1.86E-02	7.64E-03	0.783		104.8	"11:59:29"	"11-24-1911"
13	1.86E-02	7.61E-03	0.785		104.8	"11:59:35"	"11-24-1911"
14	1.96E-02	7.84E-03	0.782		107.8	"11:59:45"	"11-24-1911"
15	1.96E-02	7.84E-03	0.783		107.7	"11:59:52"	"11-24-1911"
16	1.13E-02	3.51E-03	0.821		82.2	"12:00:02"	"11-24-1911"
17	1.13E-02	3.51E-03	0.823		82	"12:00:08"	"11-24-1911"
18	1.66E-02	6.01E-03	0.804		99	"12:00:17"	"11-24-1911"
19	1.66E-02	6.08E-03	0.802		98.7	"12:00:23"	"11-24-1911"
20	1.59E-02	6.10E-03	0.805		96.1	"12:00:32"	"11-24-1911"
21	1.60E-02	6.12E-03	0.801		96.5	"12:00:38"	"11-24-1911"
22	1.71E-02	7.47E-03	0.8	omit	98.8	"12:00:45"	"11-24-1911"
23	1.58E-02	4.77E-03	0.807	omit	98.7	"12:08:46"	"11-24-1911"
24	1.57E-02	4.85E-03	0.793	omit	99	"12:08:54"	"11-24-1911"
25	1.67E-02	5.04E-03	0.788		102.6	"12:09:18"	"11-24-1911"
26	1.61E-02	5.00E-03	0.787		100.3	"12:09:23"	"11-24-1911"
27	1.64E-02	4.78E-03	0.79		102	"12:09:30"	"11-24-1911"
28	1.26E-02	3.49E-03	0.811		89	"12:09:39"	"11-24-1911"
29	1.26E-02	3.49E-03	0.812		89.1	"12:09:45"	"11-24-1911"
30	1.74E-02	5.90E-03	0.794		102.7	"12:09:53"	"11-24-1911"
31	1.74E-02	5.90E-03	0.797		102.3	"12:09:59"	"11-24-1911"
32	1.74E-02	5.91E-03	0.793		102.5	"12:10:04"	"11-24-1911"
33	1.96E-02	7.52E-03	0.783		108.2	"12:10:12"	"11-24-1911"
34	1.96E-02	7.47E-03	0.783		108.1	"12:10:18"	"11-24-1911"
35	1.63E-02	3.95E-03	0.802		104.6	"12:10:26"	"11-24-1911"
36	1.63E-02	3.96E-03	0.8		104.5	"12:10:32"	"11-24-1911"
37	1.25E-02	2.80E-03	0.812		92.6	"12:10:40"	"11-24-1911"
<b>MEANS</b>	<b>1.57E-02</b>	<b>5.60E-03</b>	<b>0.798297</b>		<b>96.98108</b>		
<b>omitting</b>			<b>0.799484</b>				

stdev

0.013981 0.00361

Measurements taken after Washing

38	2.99E-03	3.13E-04	0.838	62.3	"14:48:07"	"11-24-1911"
39	3.10E-03	3.59E-04	0.836	59.5	"14:48:17"	"11-24-1911"
42	1.09E-02	1.81E-03	0.842 omit	93.3	"14:48:39"	"11-24-1911"
43	1.09E-02	1.82E-03	0.862 omit	92	"14:48:44"	"11-24-1911"
44	1.09E-02	1.87E-03	0.853	91.2	"14:48:50"	"11-24-1911"
45	2.62E-03	3.65E-04	0.855	49	"14:49:23"	"11-24-1911"
46	2.61E-03	3.59E-04	0.858	49.1	"14:49:28"	"11-24-1911"
47	9.42E-03	1.34E-03	0.832	93	"14:49:47"	"11-24-1911"
48	9.45E-03	1.34E-03	0.832	93.3	"14:49:53"	"11-24-1911"
49	6.19E-03	1.33E-03	0.835	65	"14:50:00"	"11-24-1911"
50	6.19E-03	1.33E-03	0.834	65	"14:50:05"	"11-24-1911"
51	9.89E-03	1.79E-03	0.823	87	"14:50:12"	"11-24-1911"
52	9.89E-03	1.80E-03	0.828	86.7	"14:50:17"	"11-24-1911"
53	2.69E-03	4.08E-04	0.845	48	"14:50:28"	"11-24-1911"
54	2.68E-03	4.07E-04	0.849	47.7	"14:50:33"	"11-24-1911"
55	6.24E-03	9.61E-04	0.825	73.5	"14:50:41"	"11-24-1911"
56	6.26E-03	9.59E-04	0.828	73.5	"14:50:45"	"11-24-1911"
57	5.40E-03	9.30E-04	0.83	65.1	"14:50:53"	"11-24-1911"
58	5.40E-03	9.34E-04	0.834	64.9	"14:50:58"	"11-24-1911"
59	5.02E-03	8.06E-04	0.845	64	"14:51:10"	"11-24-1911"
60	5.02E-03	8.05E-04	0.846	64	"14:51:15"	"11-24-1911"
61	9.94E-03	1.56E-03	0.835 omit	91.4	"14:51:22"	"11-24-1911"
62	9.92E-03	1.56E-03	0.841 omit	91	"14:51:27"	"11-24-1911"
63	4.31E-03	6.05E-04	0.849	62.6	"14:51:33"	"11-24-1911"
64	4.32E-03	6.02E-04	0.851	63	"14:51:38"	"11-24-1911"
65	4.83E-03	6.38E-04	0.851	68.3	"14:51:51"	"11-24-1911"
66	3.97E-03	2.21E-03	0.861 omit	45.3	"14:59:42"	"11-24-1911"
67	4.87E-03	2.61E-03	0.867 omit	50.1	"15:06:05"	"11-24-1911"
68	6.01E-03	2.54E-03	0.882 high	56	"15:06:36"	"11-24-1911"
69	6.00E-03	2.55E-03	0.882 high	55.9	"15:06:42"	"11-24-1911"

**MEANS 6.26E-03 1.23E-03 0.844967 69.02333**  
**omitted 0.839864**  
**stdev 0.010589**  
**stderr 0.003348**

Measurements taken on reference mirror immediately afterwards

70	1.55E-03	7.60E-04	0.926	27.4	"15:06:58"	"11-24-1911"
71	1.55E-03	7.63E-04	0.925	27.5	"15:07:03"	"11-24-1911"
72	3.96E-03	2.52E-03	0.921	43.6	"15:07:17"	"11-24-1911"
73	3.97E-03	2.54E-03	0.922	43.7	"15:07:22"	"11-24-1911"
74	4.04E-03	2.52E-03	0.92	44.1	"15:07:29"	"11-24-1911"
75	4.04E-03	2.53E-03	0.92	44.1	"15:07:34"	"11-24-1911"
76	4.69E-03	2.07E-03	0.914	48.4	"15:07:42"	"11-24-1911"
77	4.69E-03	2.08E-03	0.912	48.5	"15:07:48"	"11-24-1911"
78	2.40E-03	2.53E-03	0.92	34.1	"15:07:56"	"11-24-1911"
79	2.41E-03	2.54E-03	0.92	34.1	"15:08:02"	"11-24-1911"
80	3.17E-03	1.36E-03	0.912	39.9	"15:08:22"	"11-24-1911"

Remark: measurements within normality

Further measurements on the primary mirror

81	4.72E-03	7.69E-04	0.845	61.6	"15:10:16"	"11-24-1911"
82	4.72E-03	7.68E-04	0.845	61.7	"15:10:21"	"11-24-1911"
83	3.59E-03	4.35E-04	0.851	61.8	"15:10:33"	"11-24-1911"
84	3.59E-03	4.33E-04	0.85	62	"15:10:40"	"11-24-1911"
85	6.13E-03	9.14E-04	0.838	73.2	"15:10:54"	"11-24-1911"
86	6.12E-03	9.12E-04	0.842	73	"15:11:00"	"11-24-1911"
87	6.13E-03	9.19E-04	0.837	73.1	"15:11:08"	"11-24-1911"
88	3.92E-03	6.44E-04	0.845	56	"15:11:18"	"11-24-1911"
89	3.92E-03	6.42E-04	0.839	56.3	"15:11:24"	"11-24-1911"
90	3.92E-03	6.41E-04	0.851	55.9	"15:11:30"	"11-24-1911"
91	4.53E-03	6.20E-04	0.849	65.1	"15:11:47"	"11-24-1911"
92	4.54E-03	6.34E-04	0.841	64.8	"15:11:52"	"11-24-1911"
93	3.29E-03	4.71E-04	0.852	54.1	"15:12:03"	"11-24-1911"
94	3.27E-03	4.67E-04	0.809	55.5	"15:12:09"	"11-24-1911"
95	3.26E-03	4.81E-04	0.796	55.1	"15:12:23"	"11-24-1911"
96	3.09E-03	4.27E-04	0.789	55.5	"15:12:29"	"11-24-1911"
97	5.44E-03	8.02E-04	0.828	69.8	"15:12:43"	"11-24-1911"
98	5.43E-03	7.99E-04	0.834	69.6	"15:12:49"	"11-24-1911"
99	5.43E-03	7.99E-04	0.825	69.9	"15:12:55"	"11-24-1911"
100	4.23E-03	6.54E-04	0.845	59.6	"15:13:09"	"11-24-1911"
<b>MEANS</b>	<b>4.46E-03</b>	<b>6.62E-04</b>	<b>0.83555</b>	<b>62.68</b>		

REMARK: lower high-angle scattering value than previous sample

Further measurements on the reference mirror

101	5.80E-03	2.02E-03	0.912	55.1	"15:19:01"	"11-24-1911"
102	5.83E-03	2.04E-03	0.913	55.2	"15:19:06"	"11-24-1911"
103	3.62E-03	1.59E-03	0.92	42.4	"15:19:15"	"11-24-1911"
104	3.64E-03	1.60E-03	0.92	42.5	"15:19:20"	"11-24-1911"
105	3.80E-03	1.35E-03	0.93	44	"15:19:28"	"11-24-1911"

Final measurements on the primary mirror

106	4.01E-03	4.68E-04	0.845	67	"15:21:43"	"11-24-1911"
107	3.96E-03	4.74E-04	0.837	65.9	"15:21:48"	"11-24-1911"
108	3.87E-03	4.68E-04	0.787	66.7	"15:21:55"	"11-24-1911"
109	3.66E-03	5.32E-04	0.834	57.4	"15:22:11"	"11-24-1911"
110	3.65E-03	5.31E-04	0.837	57.2	"15:22:16"	"11-24-1911"
111	6.07E-03	7.62E-04	0.84	79.2	"15:22:25"	"11-24-1911"