

# Filter wheels in FLASH1 and FLASH2

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## FLASH1 filter wheels: Current status and history

### Currently mounted filters (January 2020)

#### Filter wheel 2 (second filter in the beam):

1	Open	40 mm	0°
2	Al 101.5 nm	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 203.1 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Al 101.5 nm	16 mm	247.5°
13	Empty		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Al 101.5 nm	16 mm	315°
16	SiNitride 500 nm	14 mm	337.5°

#### Filter wheel 1 (first filter in the beam):

1	Open	40 mm	0°
2	Al 100.9 nm	16 mm	22.5°
3	Al 193.0 nm (small hole, 8/15)	16 mm	45°
4	Al 423.4 nm (Broken)	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Si 197.8 nm	10 mm	157.5°

9	Si 419.9 nm (thinner at 8:30 to center)	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	Nb 384.8 nm (much thinner at 3:00, close to center)	16 mm	225°
12	C/Al/C 248.2nm/496.2nm/248.2 nm	16 mm	247.5°
13	SiNitride 350 nm	14 mm	270°
14	Al 101.2 nm	16 mm	292.5°
15	Al 198.3 nm	16 mm	315°
16	Aperture	~2mm	337.5°

## Mounted filters 21.06.2016 - till now

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 101.5 nm	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 203.1 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Al 101.5 nm	16 mm	247.5°
13	Empty		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Al 101.5 nm	16 mm	315°
16	SiNitride 500 nm	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 100.9 nm	16 mm	22.5°
3	Al 193.0 nm (small hole, 8/15)	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Si 197.8 nm	10 mm	157.5°
9	Si 419.9 nm (thinner at 8:30 to center)	10 mm	180°

10	Nb 197.0 nm	16 mm	202.5°
11	Nb 384.8 nm (much thinner at 3:00, close to center)	16 mm	225°
12	C/Al/C 248.2nm/496.2nm/248.2 nm	16 mm	247.5°
13	SiNitride 350 nm	14 mm	270°
14	Al 101.2 nm	16 mm	292.5°
15	Al 198.3 nm	16 mm	315°
16	Aperture	~2mm	337.5°

## Mounted filters 4.5.2015 – 20.06.2016

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 101.5 nm	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 203.1 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Al 101.5 nm	16 mm	247.5°
13	Empty		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Al 101.5 nm	16 mm	315°
16	SiNitride 500 nm	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 100.9 nm	16 mm	22.5°
3	Al 193.0 nm (small hole, 8/15)	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 296.1 nm	16 mm	112.5°
7	Empty		135°
8	Si 197.8 nm	10 mm	157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°

11	Nb 384.8 nm	16 mm	225°
12	C/Al/C 248.2nm/496.2nm/248.2 nm	16 mm	247.5°
13	SiNitride 350 nm	14 mm	270°
14	Al 101.2 nm	16 mm	292.5°
15	Al 198.3 nm	16 mm	315°
16	Aperture	~2mm	337.5°

## Mounted filters 15.05.2013- 3.5.2015

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 101.2 nm (Broken since 21.11.14)	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 203.1nm	16 mm	90°
6	Zr 296.1nm (Bumpy since 21.11.14)	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Empty		247.5°
13	Empty		270°
14	Empty		292.5°
15	Al 101.2 nm (Broken)	16 mm	315°
16	SiNitride 500nm	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 101.2 nm (Broken since 21.11.14)	16 mm	22.5°
3	Al 193.0 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 296.1 nm (Bumpy since 21.11.14)	16 mm	112.5°
7	Empty		135°
8	Si 197.8 nm (more wrinkled since 21.11.14)	10 mm	157.5°
9	Si 419.9 nm (more wrinkled since 21.11.14)	10 mm	180°
10	Nb 197.0 nm (more wrinkled since 21.11.14)	16 mm	202.5°
11	Nb 384.8 nm	16 mm	225°

12	Empty		247.5°
13	SiNitride 350 nm	14 mm	270°
14	Al 101.2 nm	16 mm	292.5°
15	Al 100.9 nm (Broken)	16 mm	315°
16	Aperture	~2mm	337.5°

## Mounted filters 25.1.2012 - 14.05.2013

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 101.2 nm (Broken Jan 2013)	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm (Broken Jan 2013)	16 mm	90°
6	Zr 287.5 nm (Broken Jan 2013)	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm (Broken Jan 2013)	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Empty		247.5°
13	Empty		270°
14	Empty		292.5°
15	Al 101.2 nm (Broken Jan 2013)	16 mm	315°
16	SiNitride 500nm	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 101.2 nm (Broken Jan 2013)	16 mm	22.5°
3	Al 193.0 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm (Broken Jan 2013)	16 mm	90°
6	Zr 287.5 nm (Broken Jan 2013)	16 mm	112.5°
7	Empty		135°
8	Si 221.9 nm (Broken Jan 2013)	10 mm	157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	Nb 384.8 nm	16 mm	225°
12	Empty		247.5°

13	SiNitride 350 nm	14 mm	270°
14	Al 101.2 nm	16 mm	292.5°
15	Al 100.9 nm	16 mm	315°
16	Aperture	~2mm	337.5°

## Mounted filters 11.08.2011 – 24.1.2012

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 100.9 nm	16 mm	22.5°
3	Al 198.3 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 287.5 nm	16 mm	112.5°
7	Empty		135°
8	Empty		157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	C/Al/C 251.2nm/502.5nm/251.1nm	16 mm	225°
12	Empty		247.5°
13	Empty		270°
14	Empty		292.5°
15	Empty		315°
16	Empty		337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 100.9 nm	16 mm	22.5°
3	Al 193.0 nm	16 mm	45°
4	Al 423.4 nm	16 mm	67.5°
5	Zr 200.0 nm	16 mm	90°
6	Zr 287.5 nm	16 mm	112.5°
7	Empty		135°
8	Si 221.9 nm	10 mm	157.5°
9	Si 419.9 nm	10 mm	180°
10	Nb 197.0 nm	16 mm	202.5°
11	Nb 384.8 nm	16 mm	225°
12	Empty		247.5°
13	Empty		270°

14	Empty		292.5°
15	Al 100.9 nm	16 mm	315°
16	Aperture	~2mm	337.5°

## FLASH2 filter wheels: Current status and history

### Currently mounted filters (January 2020)

#### Filter wheel 2 (second filter in the beam):

1	Open	40 mm	0°
2	Al 102.2 nm	16 mm	22.5°
3	Al 102.2 nm	16 mm	45°
4	Al 102.2 nm	16 mm	67.5°
5	Al 200.8 nm	16 mm	90°
6	Al 400.4 nm (Broken)	16 mm	112.5°
7	Empty		135°
8	Zr 200.4 nm		157.5°
9	Zr 295.7 nm	10 mm	180°
10	Si 197.2 nm	16 mm	202.5°
11	Si 401.0 nm	16 mm	225°
12	Empty	16 mm	247.5°
13	Nb 197.0 nm		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Nb 978.3 nm	16 mm	315°
16	Empty	14 mm	337.5°

#### Filter wheel 1 (first filter in the beam):

1	Open	40 mm	0°
2	Al 205.2 nm	16 mm	22.5°
3	Al 205.2 nm	16 mm	45°
4	Al 400.4 nm	16 mm	67.5°
5	Zr 200.4 nm	16 mm	90°
6	Zr 295.7 nm	16 mm	112.5°
7	Empty		135°
8	Si 200.8 nm	10 mm	157.5°
9	Si 411.0 nm	10 mm	180°
10	Empty	16 mm	202.5°
11	Nb 197.0 nm	16 mm	225°

12	Nb 405.0 nm	16 mm	247.5°
13	Nb 978.3 nm	14 mm	270°
14	Al 400.4 nm	16 mm	292.5°
15	Empty	16 mm	315°
16	C/Al/C 248.2nm/496.2nm/248.2 nm	~2mm	337.5°

## Mounted filters 8.7.2019 – till now

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 102.2 nm	16 mm	22.5°
3	Al 102.2 nm	16 mm	45°
4	Al 102.2 nm	16 mm	67.5°
5	Al 200.8 nm	16 mm	90°
6	Al 400.4 nm	16 mm	112.5°
7	Empty		135°
8	Zr 200.4 nm		157.5°
9	Zr 295.7 nm	10 mm	180°
10	Si 197.2 nm	16 mm	202.5°
11	Si 401.0 nm	16 mm	225°
12	Empty	16 mm	247.5°
13	Nb 197.0 nm		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Nb 978.3 nm	16 mm	315°
16	Empty	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 205.2 nm	16 mm	22.5°
3	Al 205.2 nm	16 mm	45°
4	Al 400.4 nm	16 mm	67.5°
5	Zr 200.4 nm	16 mm	90°
6	Zr 295.7 nm	16 mm	112.5°
7	Empty		135°
8	Si 200.8 nm	10 mm	157.5°
9	Si 411.0 nm	10 mm	180°
10	Empty	16 mm	202.5°
11	Nb 197.0 nm	16 mm	225°
12	Nb 405.0 nm	16 mm	247.5°
13	Nb 978.3 nm	14 mm	270°



14	Al 400.4 nm	16 mm	292.5°
15	Empty	16 mm	315°
16	C/Al/C 248.2nm/496.2nm/248.2 nm	~2mm	337.5°

## Mounted filters 20.6.2019 – 7.7.2019

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 102.2 nm	16 mm	22.5°
3	Al 102.2 nm	16 mm	45°
4	Al 102.2 nm	16 mm	67.5°
5	Al 200.8 nm	16 mm	90°
6	Al 402.2 nm (Broken)	16 mm	112.5°
7	Empty		135°
8	Zr 200.4 nm		157.5°
9	Zr 295.7 nm	10 mm	180°
10	Si 200.8 nm	16 mm	202.5°
11	Si 401.0 nm	16 mm	225°
12	Empty	16 mm	247.5°
13	Nb 197.0 nm		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Nb 978.3 nm	16 mm	315°
16	Empty	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 205.2 nm	16 mm	22.5°
3	Al 205.2 nm	16 mm	45°
4	Al 402.2 nm (Broken)	16 mm	67.5°
5	Zr 200.4 nm	16 mm	90°
6	Zr 295.7 nm	16 mm	112.5°
7	Empty		135°
8	Si 200.8 nm	10 mm	157.5°
9	Si 401.0 nm (Broken)	10 mm	180°
10	Empty	16 mm	202.5°
11	Nb 197.0 nm	16 mm	225°
12	Nb 405.0 nm	16 mm	247.5°
13	Nb 978.3 nm	14 mm	270°
14	Empty	16 mm	292.5°
15	Empty	16 mm	315°

16	C/Al/C 248.2nm/496.2nm/248.2 nm	~2mm	337.5°
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## Mounted filters 9.8.2018 – 19.6.2019

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 102.2 nm	16 mm	22.5°
3	Al 102.2 nm	16 mm	45°
4	Al 102.2 nm	16 mm	67.5°
5	Al 200.8 nm	16 mm	90°
6	Al 402.2 nm	16 mm	112.5°
7	Empty		135°
8	Zr 200.4 nm		157.5°
9	Zr 295.7 nm	10 mm	180°
10	Si 200.8 nm	16 mm	202.5°
11	Si 401.0 nm	16 mm	225°
12	Empty	16 mm	247.5°
13	Nb 197.0 nm		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Nb 978.3 nm	16 mm	315°
16	Empty	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 205.2 nm	16 mm	22.5°
3	Al 205.2 nm	16 mm	45°
4	Al 402.2 nm	16 mm	67.5°
5	Zr 200.4 nm	16 mm	90°
6	Zr 295.7 nm	16 mm	112.5°
7	Empty		135°
8	Si 200.8 nm	10 mm	157.5°
9	Si 401.0 nm	10 mm	180°
10	Empty	16 mm	202.5°
11	Nb 197.0 nm	16 mm	225°
12	Nb 405.0 nm	16 mm	247.5°
13	Nb 978.3 nm	14 mm	270°
14	Empty	16 mm	292.5°
15	Empty	16 mm	315°
16	C/Al/C 248.2nm/496.2nm/248.2 nm	~2mm	337.5°

## Mounted filters 1.3.2016 – 8.8.2018

### Filter wheel 2:

1	Open	40 mm	0°
2	Al 102.2 nm	16 mm	22.5°
3	Al 102.2 nm	16 mm	45°
4	Al 102.2 nm	16 mm	67.5°
5	Al 200.8 nm	16 mm	90°
6	Al 402.2 nm	16 mm	112.5°
7	Empty		135°
8	Zr 200.4 nm		157.5°
9	Zr 295.7 nm	10 mm	180°
10	Si 200.8 nm	16 mm	202.5°
11	Si 401.0 nm	16 mm	225°
12	Empty	16 mm	247.5°
13	Nb 197.0 nm		270°
14	Nb 405.0 nm	16 mm	292.5°
15	Nb 978.3 nm	16 mm	315°
16	Empty	14 mm	337.5°

### Filter wheel 1:

1	Open	40 mm	0°
2	Al 205.2 nm	16 mm	22.5°
3	Al 205.2 nm	16 mm	45°
4	Al 402.2 nm	16 mm	67.5°
5	Zr 200.4 nm	16 mm	90°
6	Zr 295.7 nm	16 mm	112.5°
7	Empty		135°
8	Si 200.8 nm	10 mm	157.5°
9	Si 401.0 nm	10 mm	180°
10	Empty	16 mm	202.5°
11	Nb 197.0 nm	16 mm	225°
12	Nb 405.0 nm	16 mm	247.5°
13	Nb 978.3 nm	14 mm	270°
14	Empty	16 mm	292.5°
15	Empty	16 mm	315°
16	C/Al/C 248.2nm/496.2nm/248.2 nm	~2mm	337.5°

