# SDP System sizing methodology

- Look at HPSO schedule
- Calculate required number of operations for each experiment (total)
- Using fractions of time spent doing each experiment, calculate average SDP compute load
- NB There are a lot of assumptions here! Extracting FLOPS is something of a how long is a piece of string exercise.

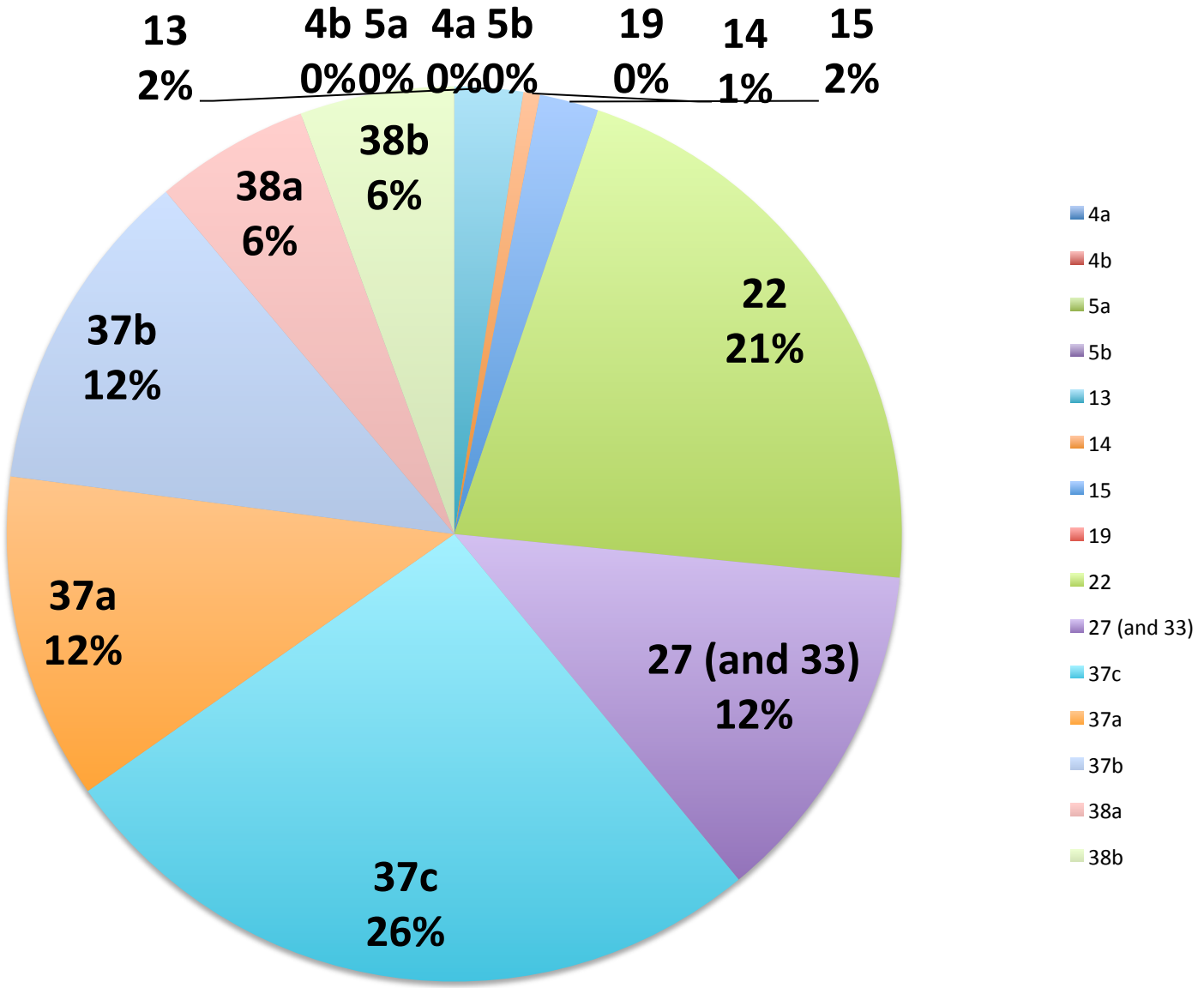
# HPSOs on LOW

| HPSO Experiment | Hours of telescope time | Keep-pace FLOPS requirements for this experiment | Fraction of time on this experiment |
|---|---|---|---|
| 1 | 5000 | 37 | 0.16 |
| 2a | 5000 | 37 | 0.16 |
| 2b | 5000 | 37 | 0.16 |
| 4c | 12750 | 0 | 0.40 |
| 5c | 4300 | 0 | 0.13 |

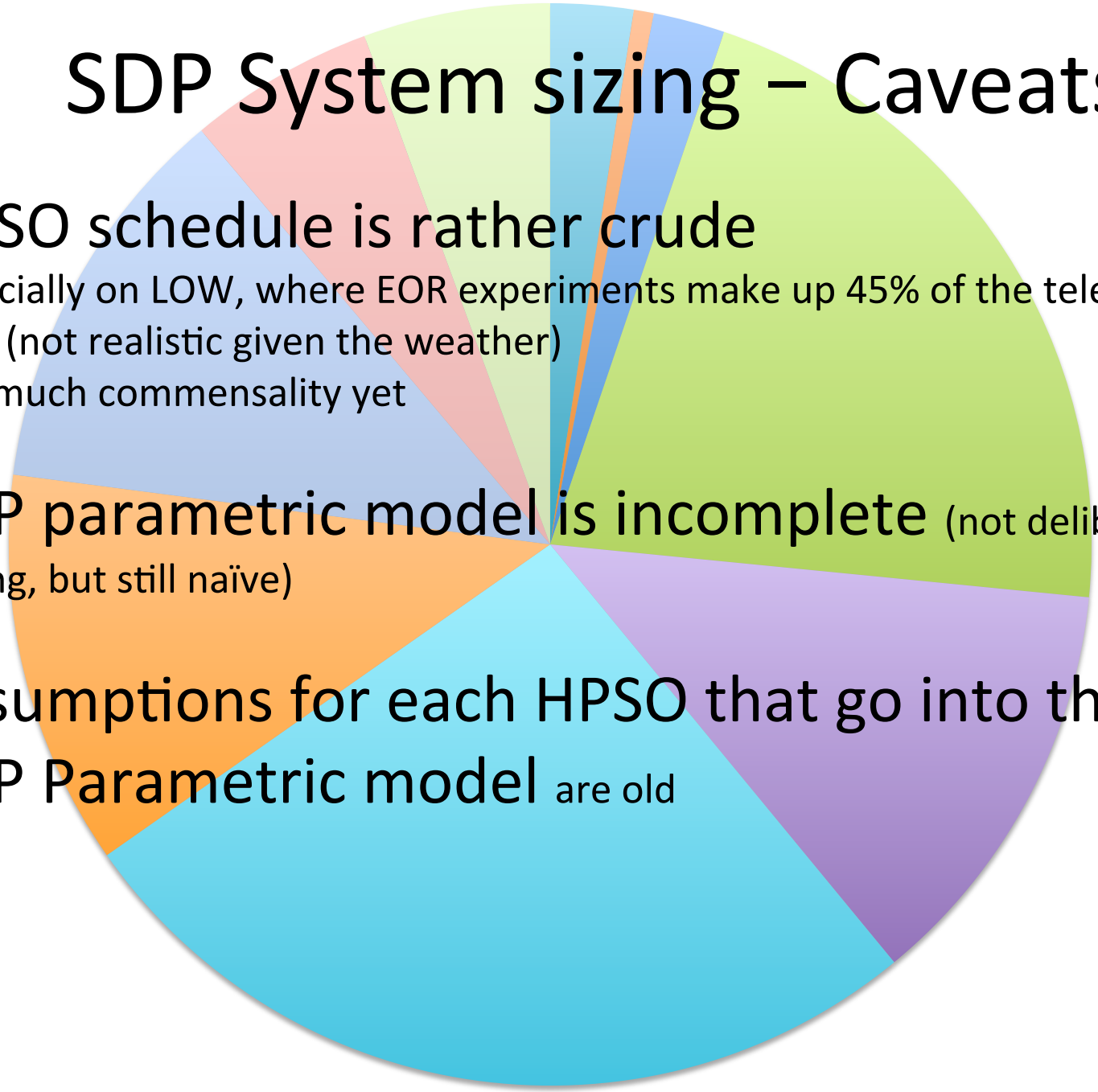
# HPSOs on MID

| HPSO Experiment | Hours of telescope time | Keep-pace FLOPS requirements for this experiment | Fraction of time on this experiment |
|---|---|---|---|
| 4a | 800 | 0 | 0.01 |
| 4b | 2400 | 0 | 0.04 |
| 5a | 1600 | 0 | 0.02 |
| 5b | 1600 | 0 | 0.02 |
| 13 | 5000 | 5 | 0.07 |
| 14 | 2000 | 3 | 0.03 |
| 15 | 12600 | 2 | 0.19 |
| 19 | 10000 | 0 | 0.15 |
| 22 | 6000 | 36 | 0.09 |
| 27 (and 33) | 10000 | 13 | 0.15 |
| 37c | 10000 | 27 | 0.15 |
| 37a | 2000 | 60 | 0.03 |
| 37b | 2000 | 60 | 0.03 |
| 38a | 1000 | 56 | 0.01 |
| 38b | 1000 | 56 | 0.01 |

# HPSOs on MID


13
2%
4b
0%
5a
0%
4a
0%
5b
0%
19
0%
14
1%
15
2%
38b
6%
38a
6%
37b
12%
22
21%
37a
12%
27 (and 33)
12%
37c
26%
4a
4b
5a
5b
13
14
15
19
22
27 (and 33)
37c
37a
37b
38a
38b

# SDP System sizing – Caveats



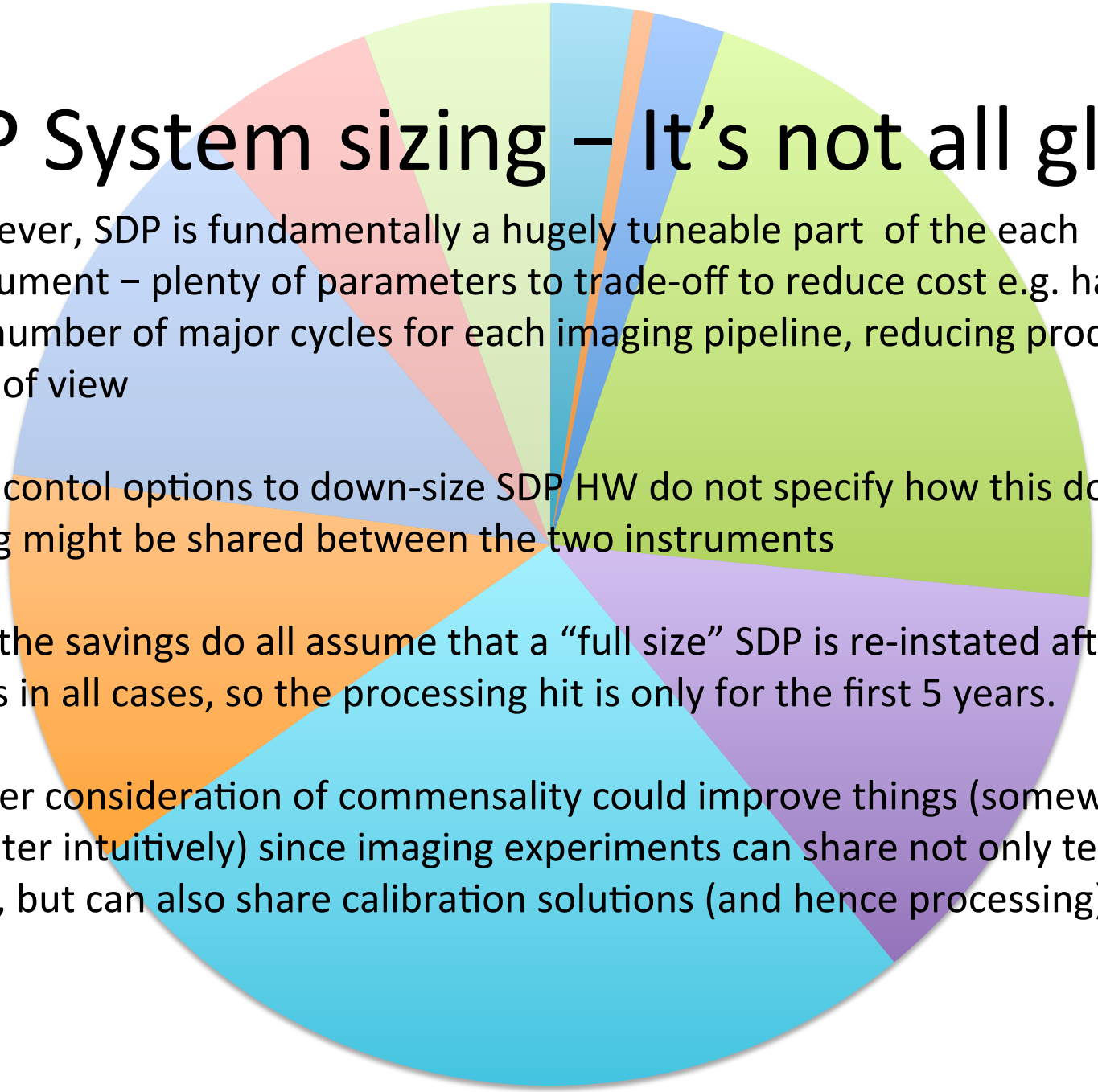
## HPSO schedule is rather crude

Especially on LOW, where EOR experiments make up 45% of the telescope time (not realistic given the weather)
Not much commensality yet

## SDP parametric model is incomplete (not deliberately wrong, but still naïve)

## Assumptions for each HPSO that go into the SDP Parametric model are old

# SDP System sizing – It's not all gloom.



However, SDP is fundamentally a hugely tuneable part  of the each instrument − plenty of parameters to trade-off to reduce cost e.g. halving the number of major cycles for each imaging pipeline, reducing processed field of view

Cost contol options to down-size SDP HW do not specify how this down-sizing might be shared between the two instruments

But, the savings do all assume that a "full size" SDP is re-instated after 5 years in all cases, so the processing hit is only for the first 5 years.

Proper consideration of commensality could improve things (somewhat counter intuitively) since imaging experiments can share not only telescope time, but can also share calibration solutions (and hence processing)