

# Update

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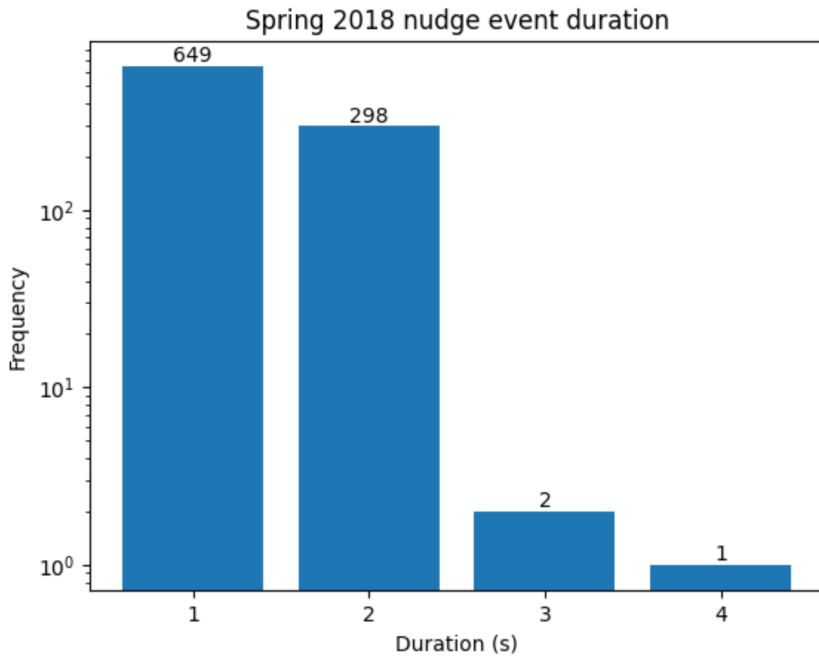
# Recap

- Collected data around the start time for each run
  - [run start - 15min, run start + 15min]
  - 1 sec step by mySampler
  - Collect data from pitch/yaw angles starting to change to becoming stable
- Identified nudge events from diamond config change
  - Discussed some criteria last meeting
  - Update new method today
- Nudge events in the middle of each run not considered before
  - Update today

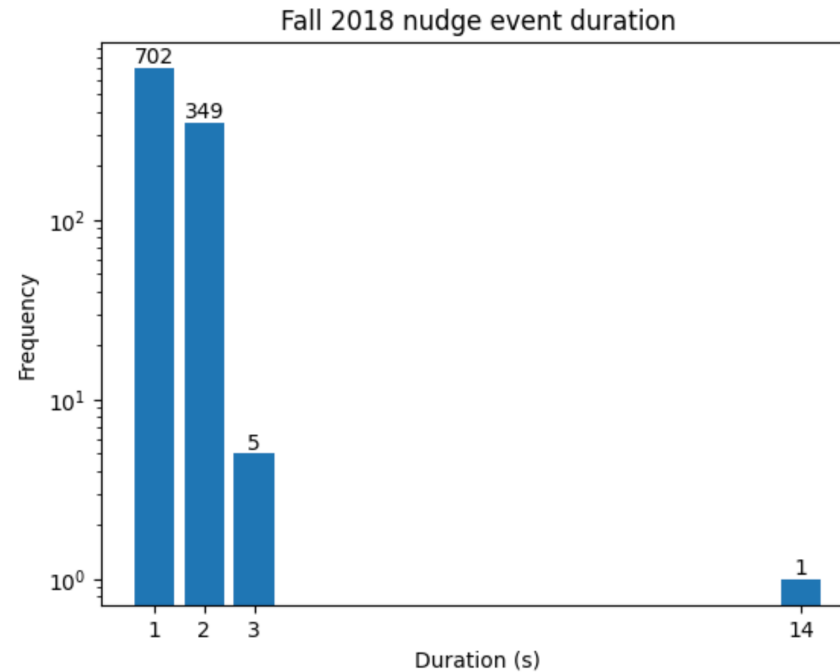
# 1. Identify nudge events

- Easier to identify diamond cfg change
  - HD:CBREM:PLANE (PARA = 1, PERP = 2, during changing = 0)
  - HD:GONI:RADIATOR\_ID (0/90, 45/135)
- Drop rows about diamond cfg change
- Only nudge events are kept

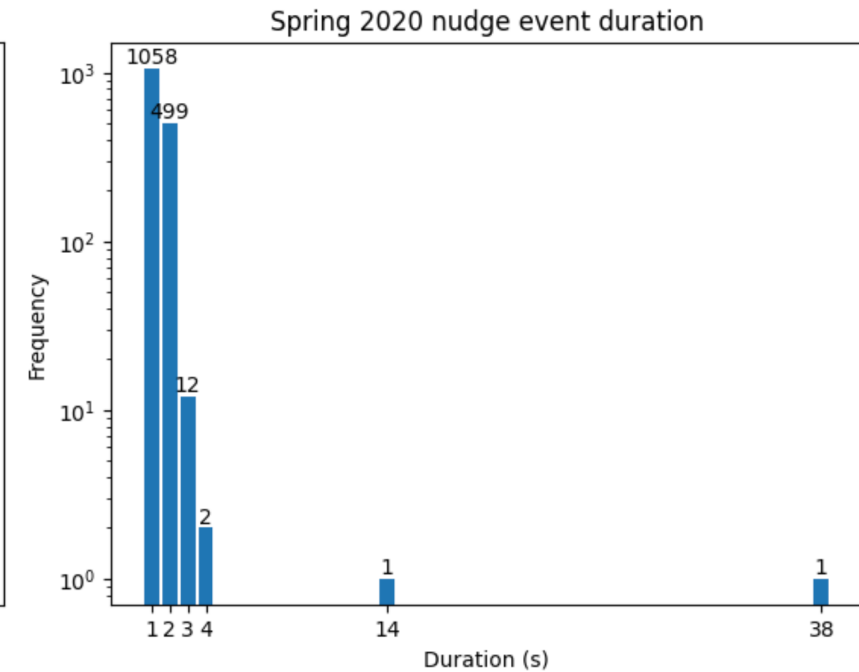
# Nudge duration: the time of pitch/yaw angles changing from start to end



542 runs  
950 nudge events



496 runs  
1057 nudge events



984 runs  
1573 nudge events

- Most nudge events complete in 2 seconds, some need 3-4 seconds
- Two events are 14s and one event is 38s
  - Shift taker nudged more than once before pitch/yaw became stable?

# Dataframe format

- Add 3 columns
  - run\_number
  - num\_nudge: number of nudge events for each run
  - nudge\_index: index for nudge events for each run

## Example for run 50701

Each row corresponds to 1 sec

	Date	run_number	nudge_index	num_nudge	... other PVs
1 <sup>st</sup> nudge event	2018-09-28 06:36:51	50701	0	3	
	...	...	...	...	
2 <sup>nd</sup> nudge event	2018-09-28 06:37:16	50701	0	3	
	2018-09-28 06:37:17	50701	1	3	
3 <sup>rd</sup> nudge event	...	...	...	...	
	2018-09-28 06:37:35	50701	2	3	
Another run	...	...	...	...	
	2018-09-28 23:34:48	50703	0	9	
	...	...	...	...	

	Date	run_number	nudge_index	num_nudge	... other PVs
1 <sup>st</sup> nudge event	2018-09-28 06:36:51	50701	0	3	
	...	...	...	...	
2 <sup>nd</sup> nudge event	2018-09-28 06:37:16	50701	0	3	
	2018-09-28 06:37:17	50701	1	3	
	...	...	...	...	
	2018-09-28 06:37:35	50701	2	3	
		...	...	...	
	2018-09-28 23:34:48	50703	0	9	
		...	...	...	

- The number of rows for each nudge events are usually more than the nudge event duration
  - Shift takers wait the coherent edge position (HD:CBREM:EDGE) to be stable before the next nudge
  - We can get the coherent edge position before the next nudge when HD:CBREM:EDGE is stable
  - What if HD:CBREM:EDGE is still unstable when the next nudge starts?

## 2. Nudge events in the middle of runs

- Use myHistory to check pitch/yaw angles' setpoint/readback
  - [run start + 15 min, run end]
- Drop diamond cfg change
- Results:
  - Spring 2018: 144 events in 22 runs
  - Fall 2018: 16 events in 3 runs
  - Spring 2020: 135 in 30 runs
- Same dataframe format saved in csv files