





Recent Activities of the AOS

Progress of Wide-Angle-Baffle and Narrow-Angle-Baffle Installation

Simon ZEIDLER*, Tomotada AKUTSU, Masatoshi YANO, Kenta TANAKA

- Block scattering coming from the Sapphire test masses on the armside
- Scattering may harm goal sensitivity without WAB!





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Status:

- All 4 baffles assembled and 3 shipped to KAGRA:
 - \rightarrow 1 installed and finalized \rightarrow IXC
 - \rightarrow 2 set in "saving mode" in IYC/EYC
- 1 more baffle currently being characterized in NAOJ (shipping in January)









Dampers

- On 4 spots: Al (6061) plate facing 8 SmCo magnets (nominal distance: ~2mm)
- Al shows much less increase of electric conductivity during cooldown compared to Cu





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WAB-IYC, Al-damper with 8 magnets, transverse excitation



		IXC		EYC		IYC	
	Mode (@ 300K)	f [Hz]	Q	f [Hz]	Q	f [Hz]	Q
	longitudinal	0.84	6.33	0.83	7.18	0.86	6.1
	transverse	1	11.17	1	15.75	1	9.09
	vertical	3.47	42.15	3.47	50	3.51	31.25
12/06/18	roll	5.79	37.6	5.76	44.49	5.89	27.78

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Issues during installation/finalization:

- Payload shifted (happened in IXC)
 - Payload structure shifted toward +X by 8~10mm
 - > WAB needed to adopt
 - But: WAB is supposed to be fixed on the optical table by screws → screw holes do not match!
 - → shifted WAB more further away from the recoil-mass (7mm → 22mm) using both remaining screw-holes and clamps
 Heat-link bracket hard to access (IXC)
- Thermometer, Burndy-Connectors,...



Narrow-Angle-Baffle





Status:

- 3 baffles (+ suspension structure) assembled
 - \rightarrow 3 installed and finalized \rightarrow IXA, IYA, EYA
- 1 more baffle to be assembled
 - → start next week

Suspension: 4 wires and 2 Spring-blades

Issues we found:

- Spring-blades are bended
 - → **Issue:** heavy influence on alignment!
 - \rightarrow **Reason:** probably due to cutting process
 - → Solution:
 - Right now, we have to live with that (company maybe found a solution, though → heat treatment)
 - > Using balance masses
- Influence from PD-holders
 - → Issue:
 - Baffle gets additional pitch
 - > Wires are easy to touch and hold the baffle
 - \rightarrow Solution:
 - \rightarrow Balance masses (sometimes difficult)
 - Wires need to be placed very carefully and rather loose
- Setting and clamping NAB to chamber
 - \rightarrow **Issue:** Installation-tower has uneven feet
 - \rightarrow **Solution:** we bought longer clamps and additional shims



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Eigenmodes:



Narrow-Angle-Baffle

Damping NAB



Using "Laser Displacement Sensors" and OpLevs for analyzing baffle movement



	NAB 1 (no balance-mass)		NAB 2		NAB 3		Design
	f	Q	f	Q	f	Q	f
longitudinal	0.59	7.2	0.58	5.2~6.1	0.59	8.3	0.587
transversal	0.65	3.2	0.6	2.8	0.59	4.6	0.583
vertical	2.02	20	2	18	2	29	2.13
yaw	0.98	1.6(?)	0.88	2.7~2.97	0.88	4.6~4.9	0.899
pitch	0.56	4.76	0.59(?)	4.26(?)	-	-	0.518
roll	-	-	2.3	7.8	2.3	11~12	2.518

Summary

WAB:

- Finalizing of IXC WAB finished, Installation into "saving mode" for IYC and EYC WAB done
- So far (with current schedule) in time!
- Process of finalization strongly depends on payload situation
- Effect on the damping due to cryogenic temperatures not clear yet (further tests planned)

NAB:

- Three NABs installed!
- Still had issues due to misshaped spring-blades
 → using balance-masses
- PD-holders (+ cable) alter the suspension
 - $\rightarrow\,$ need to take care during installation

Thank you for your attention!

300K

76K

21K







Q = 20



Q = 0.2



