

E060178-00-D

AOS Pick Off Beam Suspension and ETM Telescope Suspension Requirements

Proposal to AOS from SUS on two Advanced LIGO Suspensions

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Suspension requirements derived from conversation with Mike Smith on Wednesday, September 8, 2004.

Requirement/ Assumptions	AdLIGO Pick-Off SUS	ETM Telescope SUS	comment
Component size	350mm dia x 60mm thick (= BS)	200mm x 750mm long cylinder	Components costed by AOS
Component mass	12.7 kg	13.6 kg	
Isolation	Double pendulum	Double pendulum	No blade springs
Beam height	-150mm	-80.5mm (=ETM _{x1}) -87.68 (=ETM _{y1})	w.r.t. LIGO global coordinate system Ref: T010076, D. Coyne
Structure length	2005mm + 70mm = 2075 mm [81.7" = 6.8']	2005mm [78.9"=6.6']	70 mm = BS beam height - 150mm global - minus ETMx beam height.
Length restrictions	Beam underneath		
Chamber	BSC, w/ beamsplitters	BSC, w/ ETMs	
Local Damping	Yes	Yes	Damping in pitch, yaw, longitudinal & transverse
DC bias/pointing	Pitch and yaw, at upper mass	Pitch and yaw, at upper mass	
Course pointing	Pitch and yaw, at upper mass	Pitch and yaw, at upper mass	For alignment
Structure resonance	Same as ETM	Same as ETM	Assume stiff upper structure and lightweight catcher/stop assembly
Prototypes	No	No	1 st article only
Fibers /music wire	Music wire	Music wire	
Quantity	1/IFO = 3 total	2/IFO - 6 total	

