



**LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY**  
**RECORD OF DECISION/AGREEMENT (RODA)**

Document	LIGO-M080057-00-Y
Date:	29-Apr-2008
Title:	RODA: Minimum spacing between FM and ITM
Attention:	aligo_sys, aligo_sus, aligo_aos
cc:	Carol Wilkinson, David Shoemaker
From/ signatories:	Name/Title: Justin Greenhalgh (RAL Pgm Mgr)      Signature: _____ Name/Title: Norna Robertson (SUS Leader)      Signature: _____ Name/Title: Mike Smith (AOS Leader)      Signature: _____ Name/Title: Dennis Coyne (Systems Leader)      Signature: _____
System(s) affected:	<input type="checkbox"/> Initial LIGO <input checked="" type="checkbox"/> Advanced LIGO <input type="checkbox"/> Other: <input style="width: 500px;" type="text"/>
Nature/ Scope:	<input checked="" type="checkbox"/> Design Decision <input type="checkbox"/> Requirements Decision <input type="checkbox"/> Work Scope Decision <input type="checkbox"/> Working Agreement between Groups <input type="checkbox"/> Other <input style="width: 200px;" type="text"/>
Subsystem(s) affected	<input type="checkbox"/> Relevant Subsystem(s)/Component(s): SUS, AOS and Systems for the FM and ITM assmblies
Primary Contacts	Group or Affiliation and Contact AOS, Mike Smith
Reference Documents:	<input style="width: 600px; height: 40px;" type="text"/>

**DECISION/AGREEMENT STATEMENT:**

All FMs shall be mounted and suspended in a suspension structure identical to the BS SUS. All ITMs shall be mounted and suspended in the ITM/ETM quad suspension structure. The minimum clearance between the FM SUS and the ITM SUS shall be no less than 5 mm—at this closest spacing, the minimum distance between the centers of the ITM HR and the FM HR surfaces is 836 mm.

**Background**

The relative separation between the FM and the ITM must be varied in order to change the Schnupp asymmetry without effecting the alignment of the recycling cavities. This will be accomplished by suspending the FM and ITM from independent suspensions structures and positioning the mirrors independently on the optical table.

The physical envelopes shown in the figure below were used to determine the minimum spacing between the FM and ITM. The footprint of the FM suspension is 450 x 650 mm, and the footprint of the ITM suspension is 585 x 710.

(Figures not to scale)

