

Subject: Re: suspension flats
From: Peter Fritschel <pf@ligo.mit.edu>
Date: Mon, 12 Jan 2004 14:19:49 -0500 (EST)
To: janeen@ligo.caltech.edu
CC: romie_j@ligo.caltech.edu

Janeen,

actually, I doubt this will be needed, but the concept was originally driven by the fact that the flats will encroach on the area of the HR face of the test masses, increasing the diffraction loss. This could be avoided if the flats did not extend over the full width of the barrel.

But, as I say, I don't think we'll need to entertain this idea. It needs a more detailed calculation than I have done, taking into account the substrate bevel, but it looks like a 8 cm long flat would be just fine. A 10 cm long flat is probably ok, but needs the more careful calculation. The next thing to do would be to draw up exactly the proposed substrate shape, showing the bevels and flats.

Peter

On Tue, 6 Jan 2004 janeen@ligo.caltech.edu wrote:

Dear Peter,
For the weekly suspension meeting on Tuesday, January 13th, would you send me an e-mail with a quick summary of your concept on reducing the width of the flat on the optics and why you're considering this?
Thanks,
Janeen

-----Included Message-----

Date: Mon, 15 Dec 2003 10:07:08 -0800
From: Norna Robertson <norna@fastloki.stanford.edu>
To: GariLynn Billingsley <Billingsley_G@ligo.caltech.edu>, Peter Fritschel <pf@ligo.mit.edu>
Cc: janeen@ligo.caltech.edu, calum Torrie <ctorrie@ligo.caltech.edu>, Helena Armandula <ahelena@ligo.caltech.edu>
Subject: Re: suspension flats

Gari

I dont at present see a problem in principle, from a mechanical suspension point of view, with having the suspension flat area only in the centre of the barrel. However one should consider the issue of the Q as you say. And i also note that the ear designers are considering a wider spacing of the two suspension fibres - up to 4 cm apart. Thus the width of the flat area would need to be significantly larger than this to ensure a lambda by 10 area in central region - so not sure how much one would save.

Janeen - this idea could be raised for discussion at a suspension telecon, and/or Helena's ribbon/fibre telecon.

Cheers
Norna

At 10:45 AM 12/13/2003 -0800, GariLynn Billingsley wrote:

Machining and polishing would be difficult. We'd have to look at what

it

does to the Q.

From an optics standpoint it's not impossible, I'm copying Janeen and

Norna so that they can answer from a suspension standpoint.

J&N, we're trying to address the issue of whether SUS can go to a 10cm

flat on the sides of the test Masses.

G

At 02:47 PM 12/12/2003, you wrote:

Gari,

is there any reason that the suspension flats have to span the width

of

the barrel? If they were just in the center of the barrel, then they would have a much smaller impact on the loss, and they could be

longer.

PF

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