Subject: [Aligo_sus] Wire bending points
From: "Greenhalgh, RJS (Justin) " <J.Greenhalgh@rl.ac.uk>
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To: "Aligo_Sus@Ligo. Caltech. Edu (E-mail)" <aligo_sus@ligo.caltech.edu>

All,

Something I meant to ask for on the agenda for yesterday's SUS meeting, but forgot:

I took an action at the summit in Glasgow to document the method for calculating the difference between breakoff point and effective pivot point for a wire (this affects the "d" distance). Geppo explained to me offline that this is a standard problem and the answer is

lambda = sqrt(E*I/T)
where
lambda is the distance from the breakoff point to the effective hinge point,
where E = Young's mod,
I = second moment of area
T is wire tension

Before applying the formula to the advanced LIGO suspensions I'd like to have some idea how it was derived, whether it has been experimentally verified, etc.

I had a good look through Calum's thesis but I didn't see it there. It doesn't appear in my standard solid mechanics texts. Has there been any work written up in this area?

Justin Greenhalgh
Head of Advanced Materials Group
Engineering Department
Room 21, Building R34
Rutherford Appleton Laboratory
Chilton, Didcot, Oxon OX11 0QX
01235 445297 or 446683 (office)
01235 445843 (fax)
01235 762603 (home)