Progress on the Cavity Laser

October 26th meeting was postponed as only a couple of laser people could make it.

Mark Oxborrow (National Physical Laboratory)and
Ken Strain (Glasgow/LIGO)

have given detailed analysis based on Joe Frisch's original.

Lots of detailed analysis, hard to summarize,
especially for a non laser expert.

Executive Summary from Mark Oxborrow:

... *the optical cavity, per se, would appear to be feasible through the scaling up and refining of existing optical/mechanical technologies*.

Need to consider dynamics of the system in more detail,
e.g. vibration from the support structure
detailed spec of control loops

Pulsed power effects on the mirrors apparently should not be a problem.

Cavity locking / mode control

Longitudinal

Solution proposed by Frisch needs more work.

Transverse

A number of schemes are described in the literature

Mirror coatings / dispersion / damage

Should not be a problem, needs further scrutiny

Proposes a roadmap towards a test cavity.

Comments from Ken Strain

Cavity stability

The longitudinal control problem seems soluble, based on experience with GW detectors and provided that the laser is stable and controllable.

Angular control is likely to be challenging for the proposed design,... the problem should be soluble.

Pulsed Power Effects

Easier than the problems solved for GW work

Feedback:

It is likely that an adequate solution can be found to length sensing.

What next ?

Still plan to organise a meeting in the UK to gather laser experts together for a brainstorming meeting.

These comments from Mark, Joe and Ken can form the basis for this.

Hope that Dave Miller will be back with us soon!