



Subject	<i>Technical Review Board (TRB) report:</i> Should We Insulate the Beamtube?
From	TRB: Dennis Coyne, Peter Fritschel, Joe Giaime, Robert Schofield, Rainer Weiss, John Worden
Refer to	L1500103-v1
Date	18 May 2015

1 Background

The original beamtube insulation was removed at both LIGO observatories between 2012 and 2014 to enable inspection, leak testing, and repairs. Mike Zucker has examined the question of whether or not the beamtubes should be re-insulated. He considered the following factors:

- i)* metal fatigue from thermal cycling;
- ii)* outgassing variability with thermal cycling;
- iii)* beamtube vibrations and their effect on scattered light noise.

Zucker's findings and conclusions are reported in LIGO-T1500217. He recommends deferring installation of insulation on the beamtubes indefinitely.

2 TRB review

The TRB listed above met with M Zucker on 16 May 2015 to review the report T1500217. On each of the three factors stated above, the TRB agreed with the report's finding that insulation is not recommended. Either the issue poses no significant risk (*i*), or, where the risk may be significant, insulation is not an effective response (*ii* and *iii*).

In summary, the TRB recommends that:

- Plans for installing insulation on the beamtubes should be deferred indefinitely
- Motion of the beamtube baffles, and its effect on scattered light phase noise, should receive further study