

LSC Six-Month Progress Report

LIGO-M000116-00-M

Organization Caltech Experimental Gravitational-Physics Group (CEGG)

Report Date 02/15/2000

Attachment B – Isolation/Suspension/Thermal Noise

Item - Task 8

1. The overall program of work continues as outlined in Section C-2 of the Proposal submitted to NSF on October 8, 1996.
2. In addition to the long-term work relating to magnetic levitation techniques for test-mass suspension, further measurements on mechanical Q of paramagnetic crystals have given encouraging results with polished samples. Details are given in the publications referred to below.
3. Experimental work on a coupled-suspension test system, to explore possibilities for extending low-frequency operation of interferometers, has been initiated, and preliminary experiments are in progress with one 40-meter test arm.

Overall the project is proceeding well, and as planned, and continues to stimulate new ideas and concepts in various areas relating to gravitational wave detection.

Details of much of the recent work are reported in two publications, currently in press:

(1) "Measurements of Mechanical Q in Levitated Paramagnetic Crystals," Proceeding of the 3rd Amaldi Conference of Gravitational Waves, Caltech 1999, ed. S. Meshkov, American Institute of Physics (in press).

(2) "Progress in Development of Some Techniques Relating to Test-Mass Suspension and to the Extension of Operation of Interferometers to Low Frequencies," Proceeding of the TAMA Workshop on Gravitational Wave Detection, October 19-22, 1999, Tokyo, Japan (in press).