LSC Six-Month Progress Report

LIGO-M000264-00-M

Organization Japan NAOJ-TAMA Group

Report Date August 15, 2000

Attachment D - Advanced Detector Configurations

Participation Masa-Katsu Fujimoto - 100%
Seiji Kawamura - 100%
Gerhard Heinzel - 100%
Osamu Miyakawa - 100%
Kentaro Somiya - 100%

Work with P. Willems and J. Mason on the RSE experiment at Caltech

In March 2000, S. Kawamura, G. Heinzel, and O. Miyakawa visited Caltech and worked with P. Willems and J. Mason on the RSE for one week. We succeeded in locking the broadband RSE for the first time.

RSE experiment in NAOJ to complement the Caltech RSE experiment

O. Miyakawa, K. Somiya, G. Heinzel, and S. Kawamura have been working on the 4m RSE experiment with the small suspension system in the vacuum. We successfully locked the power recycled Michelson interferometer, and then, the recombined Fabry-Perot Michelson interferometer. We are now ready to proceed to the RSE interferometer without power recycling.

Investigation of a signal extraction scheme for the RSE

O. Miyakawa, G. Heinzel, S. Kawamura, and M. Fujimoto have been studying a new signal extraction scheme for the RSE interferometer. The method we are investigating employs only one phase-modulation and third harmonic demodulation to extract the signal extraction cavity length. It seems that it works when the power recycling gain is very small (or no power recycling is engaged) and thus the arm cavity finesse is very high.