

LSC Six-Month Progress Report

LIGO-M000266-00-M

Organization Institute of Applied Physics (IAP) Russian Academy of Sciences at Nizhny Novgorod

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Attachment C - Lasers/Optics

Participation Alexandr Sergeev - 100%
Efim Khazanov - 100%
Anatoly Poteomkin - 100%
Anatoly Mal'shakov - 100%
Oleg Palashov - 100%
Nikolay Andreev - 100%
Alexandr Matveev - 100%
Ilya Kozhevatoov - 100%
Elena Kulikova - 100%
Nikolay Cheragin - 100%
Eugeny Katin - 100%
Vladimir Davidov - 100%

- a** Objective, reference plates and light source for high aperture advanced phase-modulated white light interferometer (PMWLI) for preliminary characterization the surface of the LIGO core optics (clear aperture up to 25cm, absolute accuracy better than $\lambda/1000$, measurement curvature radius 3000m or more) were designed. Also the first surface map was measured in situ (3m distance) by modified PMWLI technique for distant monitoring.
- b** Isolation ratio of the novel design of a Faraday isolator was measured at 45dB level at 80W CW 1 micron wavelength laser power. Experimental and theoretical investigation showed that [001] orientation of TGG crystal is the best for the traditional design of Faraday isolators and [111] orientation is the best for the novel design.
- c** Different beam scanning techniques for high precision in situ probing of LIGO components by means of self-focussing effect were evaluated.