

LSC Six-Month Progress Report

Organization Institute of Applied Physics (IAP) at Nizhny Novgorod, Russia

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Attachment C - Lasers/Optics

Item - Task 8 - a

comparative analysis (estimation accuracy, dynamical range etc.) of two possible schemes of profilometer for spherical surface measurements - advanced Fizeau interferometer and upgraded Twyman-Green interferometer - in order to provide measurement of sphericity down to 50cm

Item - Task 8 - b

measurement of absorption, photoelastic coefficients and thermo-optic constant of materials used in Faraday isolators; chose the best material for high average power radiation taking into account possibility of novel designs of Faraday isolators

Item - Task 8 - c

development of experimental techniques based on nonlinear optical effects for high precision remote (in situ) probing of LIGO optics components, including:

1. optimization of software support of the measurement technique based on the radiation self-focusing effect to measure small wave front distortion with absolute precision up to $1/2000$;
2. upgrade facility for experimental investigation of stimulated Raman scattering image receiver to improve reliability and accuracy of remote measurement of surface deviation of LIGO core optics.