

# Core Optics Reference Design

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1999 -2003 Pathfinder II - Sapphire

Size 30 Kg - Crucibles and furnaces in place

a-axis

Interferometer Analysis

Coating compatibility

Available Today 30 Kg

1 year to requirements

High Confidence

c-axis

Available Today 15 Kg

1 year to 30 Kg

2-3 year to requirement

Moderate confidence

Optical Homogeneity -  $\lambda$  (typical)

but  $\lambda/40$  demonstrated by Highes Danbury

2003 Branch Point Between Silica and Sapphire

Silica requirements already demonstrated

2003-2005 Fabricate Optics

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# Core Optics Compensation, Ancillary Optics and Photodiodes

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## Core Optic Thermal Compensation

X 10 for both Sapphire (20 ppm/cm) and Silica (1ppm/cm)

Laser based actuator of BS, and both input mirrors

Dark fringe sensing

## Ancillary Optics

LiNbO<sub>3</sub> PM in low power beams (before power stage or in MZ)

Isolators - point spherical compensation

Active compensation - if ramped laser power required

## Left to do

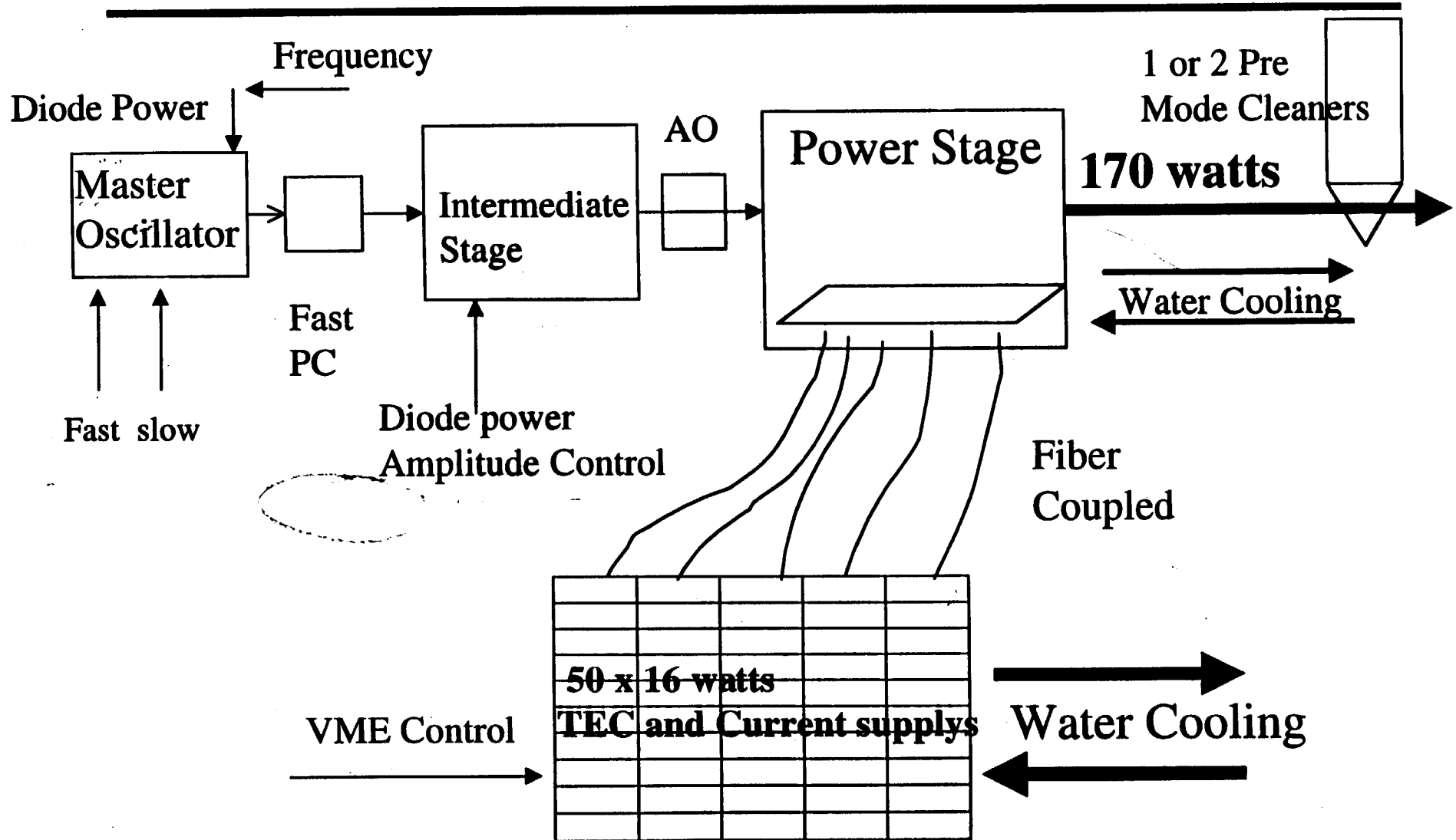
Photodiodes ? Thermal Modeling of MC, IFO

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# Laser Reference Design



# Monday PM Schedule for the L&OWG

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Lasers - Savage

Core Optics Compensation, Ancillary Optics  
and Photodiodes - Tanner

L&OWG Subgroup Discussions 2:15-4:00

Core and IO Optics and Mode Cleaners - Camp

Subgroup Recommendations to the Full L&OWG  
Followed by Discussion 4:00 - 5:30

*Note 1, Linda Turner, 08/17/99 07:53:16 PM*  
LIGO-G990079-15-M