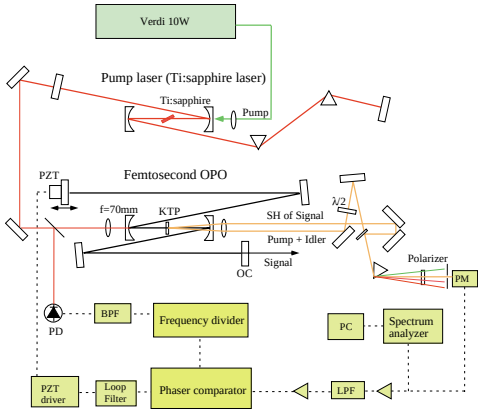
Carrier-phase Locking among Subharmonic Pulses

Yohei KOBAYASHI
Photonics Research Institute
e-mail:
y.kobayashi@aist.go.jp
AIST Today;
Vol. 1, No. 9 (2001) 17

We have developed a subharmonic generator based on a femtosecond parametric oscillator (OPO) in order to realize a sub-femtosecond pulse train generation by Fourier synthesis. We have developed a method to measure the optical-phase relation among the pump, signal and the idler pulses in OPO. The carrier-envelope phase of the signal and the idler pulses were locked to that of the pump pulse by an electronic feedback system every six pulses. This technique will open the way to generate an attosecond pulse train and an optical synthesizer.



Experimental setup for carrier-phase-lock among the pump, signal, and idler pulses.
PM; photomultiplier tube, LPF; low-pass filter, BPF; band-pass filter, PZT; piezo-electric transducer, OC; output coupler, PD; photodiode.

Supercomputer ensamble enabled by Grid technology over Tsukuba WAN

Satoshi SEKIGUCHI
Information Technology Research Institute
e-mail:
s.sekiguchi@aist.go.jp
AIST Today;
Vol. 1, No. 9 (2001) 19

The Information Technology Research Institute at the National Institute of Advanced Industrial Science and Technology (AIST) has used an improved version of GLOBUS software, developed through joint research with NEC Corporation, and achieved the first ever operation of a supercomputer via a high-speed network. The GLOBUS is a highly rated grid middleware originally having developed by USC's Information Science Institute (ISI) and Argonne National Laboratory. In the research, the supercomputer at the Telecommunications Advancement Organization of Japan Tsukuba Gigabit Laboratory and an AIST computer were connected via the Tsukuba WAN high-speed network. The Gigabit Laboratory supercomputer was then successfully operated by the AIST computer.

Tsukuba WAN AIST NODE (located at TACC)