A HIGH SPECTRAL PURITY FEMTO-SECOND DEMODULATION SOURCE FOR SUBMILLIMETER SPECTROSCOPY

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A Low Temperature Grown GaAs (LTG GaAs) photo-switch has been used to demodulate pulses from a 840 MHz, mode-locked, Ti:sapphire, femto-second laser. This technique produces power throughout the submillimeter and optical processing can be used to tailor the radiation. The order of magnitude increase in mode-lock frequency from the more commonly used 82 MHz systems significantly impacts many parameters important to spectroscopy. The spectral purity, sources of noise, power characteristics, and multiplex capabilities of the two systems will be compared and contrasted. The design of the 840 MHz laser will also be discussed.