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Detail Study for the Laser Activating Reflective Switch for THz Free Electron Laser

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THz free electron laser at SANKEN, Osaka university generates a train of THz pulses with the interval of 27 MHz in the repetition of 5 Hz. The number of pulses in a train is about 100. Single pulse energy exceeds 200 μJ at the carrier frequency of 4.5 THz. To extract a single pulse from the train, the reflective switch of the electron-hole plasma on the surface of Gallium Arsenide wafer driven by the Ti:sapphire laser pulse was constructed and the characteristics of the switch is studied. By evaluating also the characteristics of silicon and germanium wafers, the comparison experiments are performed. In addition, the study for carrier dynamics with the time scale of microseconds by measuring the variations of reflected and transmitted THz pulses with the interval of 27 MHz are being conducted. We report the recent results of the switching for the THz pulse and its time evolution in this conference.

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