

Electro-optic sampling of terahertz electro-magnetic pulses by using ferroelectric crystals in Cherenkov-phase-matching scheme

place: new ANKA seminar room, building 348, 2nd floor
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Date: 6.07.2015

Inviting person: Erik Bründermann, KIT-IPS

Speaker: Masahiko Tani

Time: 11:00

For detection of terahertz (THz) electro-magnetic pulses, electro-optic (EO) sampling is a commonly used technique. However, available sampling wavelengths and EO crystals are limited by the velocity mismatch between the sampling optical pulse and THz pulse propagating in the EO crystal.

In this paper, it is explained that how such limitations are alleviated by using the non-collinear Cherenkov-phase-matching, with which we can select an arbitrary sampling wavelength and an EO crystal for detection of THz pulses.

It is shown that the Cherenkov-phase-matching scheme has been successfully applied to ferroelectric crystals (LiNbO₃ and BaTiO₃) and that an efficient EO sampling of THz pulses is possible with these ferroelectric crystals. This EO sampling technique might be useful also for evaluation of electron beam bunching profiles.

http://fir.u-fukui.ac.jp/Eng_index.html

http://fir.u-fukui.ac.jp/thzlab/index_E.html