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Abstract:We experimentally demonstrate an efficient electro-optic sampling scheme based on Cherenkov phase matching of broadband terahertz radiation with 800-nm femtosecond probe beam in a 0.5 mm-thick LiNbO3 crystal coupled to a Si prism. The electro-optic signal from a Cherenkov-phase-matched LiNbO 3 crystal is found to be comparable to that with a 4 mm-thick ZnTe crystal using a collinear phase matching. The Cherenkov phase matching technique can be achieved with any probe wavelength and hence has an advantage over the collinear phase matching method.
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