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Title:Directional elliptically polarized terahertz emission from air plasma produced by circularly polarized intense femtosecond laser pulses

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Abstract:We have observed directional elliptically polarized terahertz (THz) waves emitted from air plasma produced by circularly polarized femtosecond laser pulses. The spatial distribution of the THz waves shows that the radiation is strongly directed forward with a peak around the laser propagation direction. Measured THz power shows a square dependence on laser energy. We consider the parametric decay of laser light to R-waves in plasma in the presence of a spontaneous magnetic field as a possible explanation for the polarization, power dependence, and direction of the THz beam.

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