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Title:Terahertz generation by the high intense laser beam
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Abstract:The terahertz (THz) frequency radiation produced as a result of nonlinear interaction of high intense laser beam with low-density ripple in collisionless magnetoplasma has been studied under the paraxial ray approximation. The relativistic change of electron mass leads to self-focusing of laser beam when the initial power of laser beam is greater than its critical power. The self-focused laser beam couples with the pre-existing density ripple to produce a nonlinear current driving the THz radiation at different frequency. The applied magnetic field enhances the nonlinear coupling efficiency. Appropriate expressions for the beam width parameter of the laser beam and the electric vector of the THz wave have been evaluated. Theory and numerical simulations show that this THz source is capable of providing power of Giga watt level. © 2012 Cambridge University Press.
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