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Impact of a plasma channel on the emission of directed high-energy photons in laser-plasma interaction[1] OLIVER JANSEN, TAO WANG, Institute for Fusion Sciences, University of Texas in Austin, TOMA TONCIAN, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany, DAVID STARK, Los Alamos National Laboratory, Los Alamos, New Mexico, EMMANUEL D'HUMIERES, University de Bordeaux/CNRS/CEA, CELIA, ALEXEY AREFIEV, Institute for Fusion Sciences, University of Texas in Austin —
Compact sources of directed high-energy photons are of great interest in current research. Common sources of high-energy photons include synchrotrons and other large and expensive accelerators. Laser-plasma interactions promise sources that are significantly smaller and cheaper than conventional ones. However, they come at the cost of producing either only small number of photons or very undirected ones. A recent study[1] shows, that the use of a plasma channel is able to significantly mitigate these problems while producing a large number of high energy, well collimated photons. We provide an analysis on the physical processes, that lead to the formation of strong magnetic fields responsible for this improvement of emission. Furthermore, we investigate the channel properties in relation to a given laser pulse.

References: [1] Stark *et al.* PRL **116**,185003 (2016).

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