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Controlling the Angular Distribution of Fast Electron Beams using Magnetic Conical Guided generated by Engineered Resistivity Gradients[1] ALEX ROBINSON, HOLGER SCHMITZ, STFC Rutherford-Appleton Laboratory, MAX TABAK, Lawrence Livermore National Laboratory — In recent work [1,2] we have shown that a solid target consisting of a wire-like element with an inverse conical taper embeded in less resistive (lower Z) material will confine and guide laser-generated fast electrons due to the resistive generation of an azimuthal magnetic field around the guide element, *and* progressively reduce the angular distribution/spread of the fast electron beam. The reduction of the angular spread being the novel element of this recent work. The reduction in the angular spread comes from the fast electrons undergoing specular, but oblique reflections from the magnetic field (which follows the inverse conical taper). In our more recent studies we have investigated the extent to which the shrinkage in the angular spread might be optimized and the potential applications this might lead to.

[1] A.P.L.Robinson, H.Schmitz, J.S.Green, C.P.Ridgers, and N.Booth PPCF 57 064004 (2015)
[2] A.P.L.Robinson, H.Schmitz, J.S.Green, C.P.Ridgers, N.Booth, and J.Pasley PoP 22 043118 (2015)

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