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Controlling Fast Electrons Divergence via Thin High-Z Layer Near Source[1] ROHINI MISHRA, University of California San Diego, MING-SHENG WEI, General Atomics, YASUHIKO SENTOKU, University of Nevada Reno, SUGREEV CHAWLA, University of California San Diego, RICH STEPHENS, General Atomics, FARHAT BEG, University of California San Diego
— 2D collisional PICLS[2] simulations are performed to study the effect of target material on fast electron transport in planer multilayer solid targets with common source layer (Al) and varying transport layers (Al, Au). Modeling shows that the strong self-generated resistive magnetic fields ($\sim$ 30 - 40 MG) are produced inside thin high-Z transport layer (e.g., Au). These fields suppress fast electron divergence and B-field channels guide the subsquent fast electron transport without much energy flux loss, which is consistent with the experimental observations.[3] Sensitivity of collimation and guiding on the offset distance of the high-Z layer from the source is examined and shown to be rather robust. We observed that the high-Z layer supplies hot return current via cumulative effects of resistive electro-magnetic fields produced inside Au, making the return current less collisional. Such return current can elongate the B-field channels, originally produced in Au layer, in backward direction and give positive feedback in the collimation of fast electrons.

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[2]Y. Sentoku, *J Comput Phys* 227, 6846 (2008).
[3]S. Chawla *et. al.* "Effect of target material on fast electron transport and resistive collimation," submitted to Phys Rev Lett."

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