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Generalized Kinetic Current-Sheet Equilibria[1] DAVID L. NEWMAN, MARTIN V. GOLDMAN, HAIHONG CHE, University of Colorado at Boulder, GIOVANNI LAPENTA, Katholicke Universiteit Leuven, Belgium — The well-studied equilibrium distribution of the Harris current-sheet [1] has long been a mainstay for the initialization of kinetic magnetic-reconnection simulations, typically with the addition of a uniform current-free background plasma. The Harris equilibrium was generalized by Yamada et al. [2] to include an electrostatic field. Here we present further generalizations of the Harris equilibrium that are exact stationary solution of the Vlasov-Maxwell equations for fields that vary in only one dimension: $\mathbf{B} = B_z(y)\hat{z} + B_x(y)\hat{x}$, and $\mathbf{E} = -(d\phi/dy)\hat{y}$. These generalizations allow for (1) Non-Maxwellian distributions, including distributions where the current is carried by velocity-space skew rather than drift; (2) Electrostatic fields that asymptotically vanish far from the current sheet; (3) Magnetic fields that rotate in the x–z plane in association with a bifurcated current profile. Methods for implementing these new equilibria to initialize kinetic reconnection simulations will be addressed.

[1] E. G. Harris, *Il Nuovo Cimento*, **23**, 115 (1962).
[2] M. Yamada, H. Ji, S. Hsu, T. Carter, R. Kulsrud, and F. Trintchouk, *Phys. Plasmas*, **7**, 1781 (2000).

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