Abstract Submitted
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Rotating Gyrokinetics with Poloidal and Toroidal Rotation[1] G.M. STAEBLER, General Atomics — A canonical transformation was found in Ref. [1] that includes poloidal and toroidal rotation in a Vlasov equilibrium distribution function. The magnetic field is required to have closed nested flux surfaces but does not need to be axisymmetric. This starting point is extended to a gyro-kinetic equation in the transformed Lagrangian phase space. It is found to be much easier to include rotation first into the Vlasov equation and then gyro-average to obtain a reduced gyro-kinetic equation than it is to try and add rotation to the gyrokinetic equation directly. The contribution to the gyrokinetic equation obtained has a simple form in vector notation. There are velocity shear and Coriolis terms for both the toroidal and poloidal rotation components. Higher order "obit squeezing" terms are also found from the canonical transformation. Similarities and differences with previous work will be presented.

[1] G.M. Staebler, Phys. Plasmas 11, 1064 (2004).

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