Canonical Representations of the Simple Map OLIVIA KERWIN,
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Hampton University, Hampton, VA 23668, ALLEN BOOZER, Columbia University, New York, NY 10027 — The simple map is the simplest map that has the
topology of a divertor tokamak. The simple map has three canonical representations: (i) toroidal flux and poloidal angle (ψ,θ) as canonical coordinates, (ii) the
physical variables (R,Z) or (X,Y) as canonical coordinates, and (iii) the action-angle
(J,ζ) or magnetic variables (Ψ,Θ) as canonical coordinates. We give the derivation
of the simple map in the (X,Y) representation. The simple map in this representation has been studied extensively (Ref. 1 and references therein). We calculate
the magnetic coordinates for the simple map, construct the simple map in magnetic
coordinates, and calculate generic topological effects of magnetic perturbations in
divertor tokamaks using the map. We also construct the simple map in (ψ,θ) representation. Preliminary results of these studies will be presented. This work is
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[1] A. Punjabi, H. Ali, T. Evans, and A. Boozer, *Phys Lett A* **364** 140–145 (2007).

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