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Lifetime of Runaway Electrons at Phase-space Attractor¹ ADRIAN FONTANILLA, BORIS BREIZMAN, Institute for Fusion Studies, University of Texas — The kinetic theory for relativistic runaway electrons² is extended to find a structure of the distribution function that is peaked around a phase-space attractor. Runaway electron dynamics are examined when the electric field is close to the threshold value required to sustain pre-existing runaways. The near vicinity of predicted stable and unstable points in momentum-space characterize a competition between accumulation and depletion which ultimately determines a finite lifetime for the accumulated runaways, albeit one that can be exponentially long and amenable to avalanche onset. The developed theory is then generalized to the case of stronger driving fields.

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