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A Krein-Like Theorem for the Linearized Vlasov-Poisson Equation GEORGE HAGSTROM, PHILIP MORRISON, University of Texas at Austin — We consider the linearized Vlasov-Poisson equation in the Banach space with the norm $\|\{f_k\}\| = \sum_k k^2 \|f_k\|_{W_{1,1}}$. We perturb the equations by changing the equilibrium solution f_0. We prove that that always exists an infinitesimal perturbation of f_0' in the $W_{1,1}$ norm can create an instability at any solution of the equation $f_0'(v) = 0$. If we restrict to dynamically accessible perturbations we instead recover a result similar to Krein's theorem for linear finite dimensional Hamiltonian systems.

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