A Hamiltonian formulation for the perturbed Vlasov-Maxwell equations[1] CRISTEL CHANDRE, Aix Marseille Univ, CNRS, ALAIN BRIZARD, Saint Michael's College — The Hamiltonian formulation for the perturbed Vlasov-Maxwell equations is expressed in terms of the perturbation derivative $\partial\mathcal{F}/\partial\epsilon \equiv [\mathcal{F}, \mathcal{S}]$ of an arbitrary functional $\mathcal{F}[f, \mathbf{E}, \mathbf{B}]$ of the Vlasov-Maxwell fields $(f, \mathbf{E}, \mathbf{B})$, which are assumed to depend continuously on the (dimensionless) perturbation parameter ϵ. Here, $[\ ,\ ]$ denotes the standard Vlasov-Maxwell functional bracket, and the perturbation *action* functional $\mathcal{S}$ is said to generate perturbations of the Vlasov-Maxwell fields. The new Hamiltonian perturbation formulation highlights the crucial roles played by polarization and magnetization in Vlasov-Maxwell perturbation theory.

Alain Brizard
Saint Michael's College

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