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Coauthors: Weijiu Liu

# CONTROLLING THE MOTION OF CHARGED PARTICLES IN A VACUUM ELECTROMAGNETIC FIELD FROM BOUNDARY

LUIS SUAZO

We consider the problem of driving two non-relativistic charged particles in a bounded vacuum electromagnetic field to a same location by applying electromagnetic forces through the boundary of the domain. The dynamics of the particles is modeled by Maxwells equations coupled with the Lorentz force law and the problem is reduced to a boundary feedback control problem. Using the perturbed energy method, we design feedback controllers and prove that the particles under the designed control move to the origin exponentially. Our result may have potential applications in particle acceleration and nuclear fusion.

University of Central Arkansas
*E-mail address*: luisris@hotmail.com