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**Conservative Relaxation of Charged Particles Beams** AFNAN AL MARZOUK, Northern Illinois University, BELA ERDELYI, Northern Illinois University and Argonne National Laboratory — Governed by Coulomb force interactions, a beam of many charged particles is considered as a long range system in its frame. Due to their irregular thermal and dynamical properties, Classical statistical mechanics cannot be applied to long range systems. Therefore, computational methods are essential in studying such systems. We present our developed computational methods to deal with dynamics of beams as long range systems.

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