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CAMFT Code for Ion Bunch Dynamics Simulation in External Fields with Parallel Computing

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The ion beams extracted from the LIS, ECRIS or EBIS are characterized by complicated charge state distribution of the ions. As a rule, for the aims of the specific experiment only one of the charge states is needed, so the charge state separation is a part of the beam formation. To predict the behavior of intense ion bunch with various distributions of the charge states in magnetic field of the separator both dipole and quadrupole type the CAMFT code is developed with one of the goal to apply the code in experiment automation system. The 3D-code current version realized with Python allows to treat various particle density distributions, various geometry of the bunch (ellipsoidal, sheet, axial-symmetric), arbitrary initial phase volumes. To provide the high accuracy and high calculation rate the parallel computing is implemented based on CUDA technology. Different tools of the result visualization are in-built. The user-friendly interface is developed.

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