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PyCAMFT code for the multi-component ion bunch dynamics simulation with parallel computing

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The ion beams extracted from the laser ion source 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 PyCAMFT code is developed with one of the goals to be included into the experiment automation system. The 3D-code is realized in Python and allows to treat the various particle density distributions, the 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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