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Effect of Dipole Mode Oscillation During High-current Heavy Ion Beam Transport and Longitudinal Compression TAKASHI KIKUCHI, TETSUO SOMEYA, MASAHIDE SEINO, KENTAROU MIYAZAWA, SHIGEO KAWATA, MITSUO NAKAJIMA, KAZUHIKO HORIOKA, UTSUNOMIYA UNIVERSITY TEAM, TOKYO INSTITUTE OF TECHNOLOGY COLLABORATION — High-current beam dynamics with a dipole oscillation is investigated during final beam bunching for a heavy ion fusion driver. The space-charge-dominated beam can be transported using a magnetic confinement system of a lattice structure. Misalignments of the transport system may cause the dipole oscillation of the beam during the transport with the longitudinal bunch compression. By using particle-in-cell simulations, we study the emittance growth due to the dipole oscillation during the final beam bunching. The results show that the transverse emittance is increased by the longitudinal compression with the dipole oscillation, and the growth rate is larger than that in the case without the oscillation.

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