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Magnetized Electron Beams

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Electron Cooling is a process in which a heavier proton or ion beam is transversely and longitudinally cooled by a co-propagating electron beam. The cooling rate for this method of beam cooling is proportional to the transverse emittance of the cooling electron beam. Using magnetized electron beams to partition the Eigen emittances we can achieve much smaller emittances for higher efficiency cooling rates. Simulations and experiments are presented for partitioning high charge magnetized beams using the Fermilab Accelerator Science and Technology (FAST) facility.

Summary

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