

# CENTER FOR BEAM PHYSICS SEMINAR

## “FFAGs for Muon Acceleration”

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BNL

Friday November 8, 2002, 10:30 AM  
Albert Ghiorso Conference Room (71-264), LBNL  
••• Refreshments served at 10:20 AM •••

Abstract: There has recently been significant interest in muon-based accelerators, both for the production of neutrinos and for colliders. Due to the finite lifetime of the muons, they must be accelerated rapidly. It is challenging to make the magnets ramp fast enough to accelerate in a synchrotron, and accelerating in a linac is very expensive. One can use a recirculating accelerator (like CEBAF), but one needs a different arc for each turn, and this limits the number of turns one can use to accelerate, and therefore requires significant amounts of RF to achieve the desired energy gain. An alternative method for muon acceleration is using a fixed field alternating gradient (FFAG) accelerator. Such an accelerator has a very large energy acceptance (a factor of two or three), allowing one to use the same arc with a magnetic field that is constant over time. Thus, one can in principle make as many turns as one can tolerate due to muon decay, therefore reducing the RF cost without increasing the arc cost. This talk will describe how FFAGs are designed, the beam dynamics in FFAGs, and what the limitations of these machines are.

Biographical data and research interests: I am currently a staff scientist at Brookhaven National Laboratory. I got my Ph.D. from Stanford University in 1996. My specialities are the theoretical and computational description of nonlinear dynamics and collective effects in particle accelerators.

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