

STANFORD LINEAR ACCELERATOR CENTER
Operated for the U.S. Department of Energy by Stanford University



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Dear Mark,

The most important challenge in the ILC damping rings is to achieve ultra-low vertical emittance at one pm-rad level with their design beam currents. In particular, this goal could be extremely hard to attain in the positron ring because of the interaction between the electron clouds and positron beam. In addition to the instabilities caused by electron clouds, we have to make sure that electron clouds do not significantly blow up the vertical emittance. To leave some room for the blow-up, machine optics may have to perform ever better.

As a first step to achieve the ultra-low vertical emittance, we plan to apply the tools, model independent analysis (MIA) developed for PEP-II operation, to improve optics in the CESR test accelerator. It has been demonstrated in PEP-II that MIA is very effective method to accurately measure and correct the optics including the coupling and dispersions. It has helped to gain 20% PEP-II luminosity in the last running period.

Starting FY2008, we plan to work on the CESR test accelerator for several weeks to measure the optics and correct beta beating, coupling and dispersion. This effort could continue or ramp up if necessary beyond FY2008 after the anticipated shutdown of PEP-II.

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