

The Electron-Cloud Instability in PEP-II*,
M.A. FURMAN and G.R. LAMBERTSON, LBL - Any intense positively-charged beam creates a cloud of electrons in the vacuum chamber. This cloud couples the transverse motions of the bunches, potentially leading to an instability. In this paper we report on estimates for such an effect for the positron beam in the PEP-II collider, obtained mostly by means of simulations. We specify quantities upon which the magnitude and shape of the electron cloud density distribution depend sensitively. We pay particular attention to the secondary electron emission process, which plays an important role in this case. A low emission coating alleviates the problem considerably. Although our calculation is still in progress, we conclude that the instability risetime is of order 2 ms, which is within the range controllable by the feedback system.

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