

# Analysis of the electron cloud density measurement with RFA in a positron ring

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In a positron ring such as KEKB LER, clouding electrons receive an almost instantaneous kick from circulating bunches. Therefore, high energy electrons in the cloud are produced just after the interaction with the bunch locally around the beam. The authors gave an estimation of their density using a high energy electron current measured with RFA and a calculated volume neglecting their initial velocity before the interaction with the bunch. To evaluate the accuracy of this estimation, the process of the measurement is analyzed using the phase space density for the motion of electrons in the transverse plane of the beam. The expressions that can evaluate the accuracy of the estimation with the help of simulation are obtained. One of the authors has shown that the accuracy for a drift space is within  $\pm 5\%$  error. For other cases such as in a solenoid field, in a quadruple field, the evaluation is not yet given. In addition to this discussion, some examples of the estimation with RFA are shown.

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