

07 FORM FACTORS AND OZI RULE

BABAR measurement of baryon time-like form factors via initial state radiation

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摘要

BABAR has measured with unprecedented accuracy the $e^+e^- \rightarrow p\bar{p}$ and $e^+e^- \rightarrow \Lambda\bar{\Lambda}$ cross sections by means of the initial state radiation technique, which has the advantages of good efficiency, good energy resolution and full angular acceptance, even exactly at threshold. A peculiar feature of these cross sections is their non-vanishing values at threshold. In the case of charged baryons, this phenomenon is expected according to the Coulomb interaction between the outgoing baryon and antibaryon. Once this Coulomb enhancement factor is taken into account, the striking result is achieved that the proton form factor at threshold is $|G^P(4 M_p^2)| = 1$, that is what is expected for pointlike fermion pairs, in spite of the proton structure. However a Coulomb enhancement factor is not expected for neutral fermions, likely in contradiction with the BABAR data. Qualitatively this behaviour is consistent with Coulomb interactions at the valence quark level.

关键词 [baryon form factor](#), [Initial state radiation](#), [BABAR](#)

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