



Contribution ID: 202

Type: **not specified**

[Cancelled] Search for the rare decays $B^- \rightarrow \Lambda \bar{p} \nu \bar{\nu}$ and $D^0 \rightarrow K \pi e^+ e^-$

Flavor-changing neutral-current (FCNC) decays of the B and D mesons are strongly suppressed in the Standard Model (SM) because they cannot be produced at tree level, and occur first at one-loop level. Therefore, they are sensitive probes for contributions beyond the SM, as heavy mediator can also occur in these loop processes. The analyses presented here are based on the entire dataset collected by the BaBar experiment at the PEP-II e^+e^- collider, at the peak of the $\Upsilon(4S)$ and near it.

The process $B^- \rightarrow \Lambda \bar{p} \nu \bar{\nu}$ is the baryonic analog of $B^- \rightarrow K^{(*)} \nu \bar{\nu}$ occurring in the SM via a $b \rightarrow s \nu \bar{\nu}$ transition through Z -penguin and W -box diagrams, and its branching ratio is predicted to be about 8×10^{-7} . This decay has never been measured before, we observe no signal and set an upper limit at 90% confidence level on the branching fraction.

The FCNC decay $D^0 \rightarrow K \pi e^+ e^-$ is further suppressed by the Glashow-Iliopoulos-Maiani mechanism, but long-distance contributions, involving vector meson dominance or photon pole amplitudes in $D^0 \rightarrow X e^+ e^-$ decays, where X is vector meson, could contribute at the level of $O(10^{-7})$. The BaBar analysis observes no signal but significantly improves on previous upper limits.

Primary author: ROBERTSON, Steven (McGill University, (CA))

Co-author: ANULLI, Fabio (Sapienza Universita e INFN, Roma I (IT))

Presenter: ROBERTSON, Steven (McGill University, (CA))

Session Classification: WG3-WG5 Joint Session

Track Classification: WG5: Physics with Heavy Flavours