I. SYSTEMATICS

A synopsis of all the systematic uncertainties is reported in table I. The total systematic uncertainty on each measurement has been determined as the sum in quadrature of the single systematic uncertainties. When the systematic uncertainty is asymmetric, the largest value has been used in the squared sum. Here a short description

source	$A_{CP}(B^0 \to K^+\pi^-)$	$A_{CP}(B^0_s \to K^-\pi^+)$	$A_{CP}(\Lambda^0_b \to p\pi^-)$	$A_{CP}(\Lambda^0_b \to pK^-)$
Charge asymm. of momentum p.d.f	0.0011	0.0025	0.0009	0.0022
Signals momentum p.d.f.	0.0013	0.0043	0.0054	0.0103
Combinatorial back. momentum p.d.f	0.0004	0.0072	0.0257	0.0065
Physics back. momentum p.d.f	0.0008	0.0002	0.0003	0.0004
Signals mass p.d.f.	0.0002	0.0066	0.0018	0.0006
Combinatorial back. mass p.d.f.	<0.0001	0.0001	<0.0001	<0.0001
Physics back. mass p.d.f	0.0001	0.0006	0.0005	0.0001
Particle Identification model	0.0023	0.0066	0.0040	0.0046
Charge asymmetry	0.0014	0.0013	0.0094	0.0096
Triggers relative efficiency	0.0003	0.0083	0.0004	0.0034
Nominal b-hadrons masses	0.0001	0.0049	0.0007	0.0008
$p_T(\Lambda^0_b)$ spectrum	0.0001	0.0010	0.0052	0.0021
Λ^0_b polarization	<0.0001	0.0027	0.0089	0.0364
TOTAL	**0.003**	**0.02**	**0.03**	**0.04**

TABLE I: Summary of the systematic uncertainties.

of the sources of the systematic uncertainties listed in Tab. I:

- **Charge asymmetries of momentum p.d.f** : possible hidden charge asymmetries in the momentum (β,p_{tot}) p.d.f. for signals and backgrounds.
- **Combinatorial back. momentum p.d.f** : uncertainty on the (β,p_{tot}) p.d.f. for the combinatorial background.
- **Physics back. momentum p.d.f** : uncertainty on the (β,p_{tot}) p.d.f. for the physics background.
- **Signals mass p.d.f.** : uncertainty on the finite knowledge of the square mass shape for signals.
- **Combinatorial back. mass p.d.f.** : uncertainty on the square invariant mass shape of the combinatorial background.
- **Physics back. mass p.d.f** : uncertainty on the value of the cut-off x_0.
- **Particle Identification model** : uncertainty on the PID model.
- **Charge asymmetry** : uncertainty on the efficiency corrections $c_{K^-\pi^+}$, $c_{p\pi^-}$ and c_{pK^-}.
- **Triggers relative efficiency** : uncertainty on the different relative efficiencies of different trigger selections.
- **Nominal b-hadrons masses** : uncertainty on the nominal b-hadrons masses from PDG.
- **$p_T(\Lambda^0_b)$ spectrum** : uncertainty on the poor knowledge of $p_T(\Lambda^0_b)$ spectrum.
- **Λ^0_b polarization**: uncertainty on the limited knowledge of the Λ^0_b polarization.