

## Supplementary material for LHCb-PAPER-2017-008

An alternative fit is performed in which all parameters including  $\Delta m_s$  are determined exclusively from the data in the  $m_{KK}$  region above 1.05 GeV. The results are presented in Table 1 and the correlation coefficients in Table 2.

Table 1: Result of a fit performed in the  $m_{KK}$  region above 1.05 GeV. All parameters, including  $\Delta m_s$ , were determined exclusively from data in this region. The uncertainties are the combined statistical and systematic.

	Value
$\Gamma_s$	$0.6499 \pm 0.0070 \text{ ps}^{-1}$
$\Delta\Gamma_s$	$0.066 \pm 0.020 \text{ ps}^{-1}$
$\phi_s$	$0.118 \pm 0.113 \text{ rad}$
$ \lambda $	$0.994 \pm 0.019$
$\Delta m_s$	$17.807 \pm 0.076 \text{ ps}^{-1}$

Table 2: Correlation coefficients between parameters determined from data in the  $m_{KK}$  region above 1.05 GeV. These include statistical and systematic correlations.

	$\Gamma_s$	$\Delta\Gamma_s$	$\phi_s$	$ \lambda $	$\Delta m_s$
$\Gamma_s$	1.00	0.54	0.02	-0.03	-0.03
$\Delta\Gamma_s$		1.00	0.04	-0.06	-0.05
$\phi_s$			1.00	-0.14	-0.01
$ \lambda $				1.00	0.17
$\Delta m_s$					1.00