$B_s \rightarrow J/\psi\ \phi$

Experiment	ϕ_s sensitivity (x_s=20)	(x_s=40)
ATLAS (3yrs)	0.03	0.05
CMS (3yrs)	0.014	0.03
LHCb (5yrs)	0.02	0.03
BTeV (1yr)	0.025	0.035

Systematics

Experimental Syst	Analytical issues	Theoretical syst
Proper time resolution	Final state is admixture of CP-even & CP-odd eigenstates $\Rightarrow$Angular analysis	Hadronic parameters; Penguin effects in extraction of ϕ_s : $O(10\%)$ (Control with $B_d \rightarrow J/\psi\rho^\circ$ may be possible)
b,b-bar hadron production asymmetery (control sample:$B_s \rightarrow D_s\pi$)		
Tagging asymm., mistag rates (control: $B^\pm \rightarrow J/\psi K^\pm$)	Ang. moments method: 6 angular terms, 8 ind. parameters (some strongly correlated)	
Final state acceptance		
Bgrd. (π/K separation ?)		
Untagged analyses require large $\Delta\Gamma_s$	Transversity angle analysis: 2 angular terms, 5 ind. parameters	Factorizable & nonfactorizable SU(3) breaking effects
Tagged analyses need Δm_s		

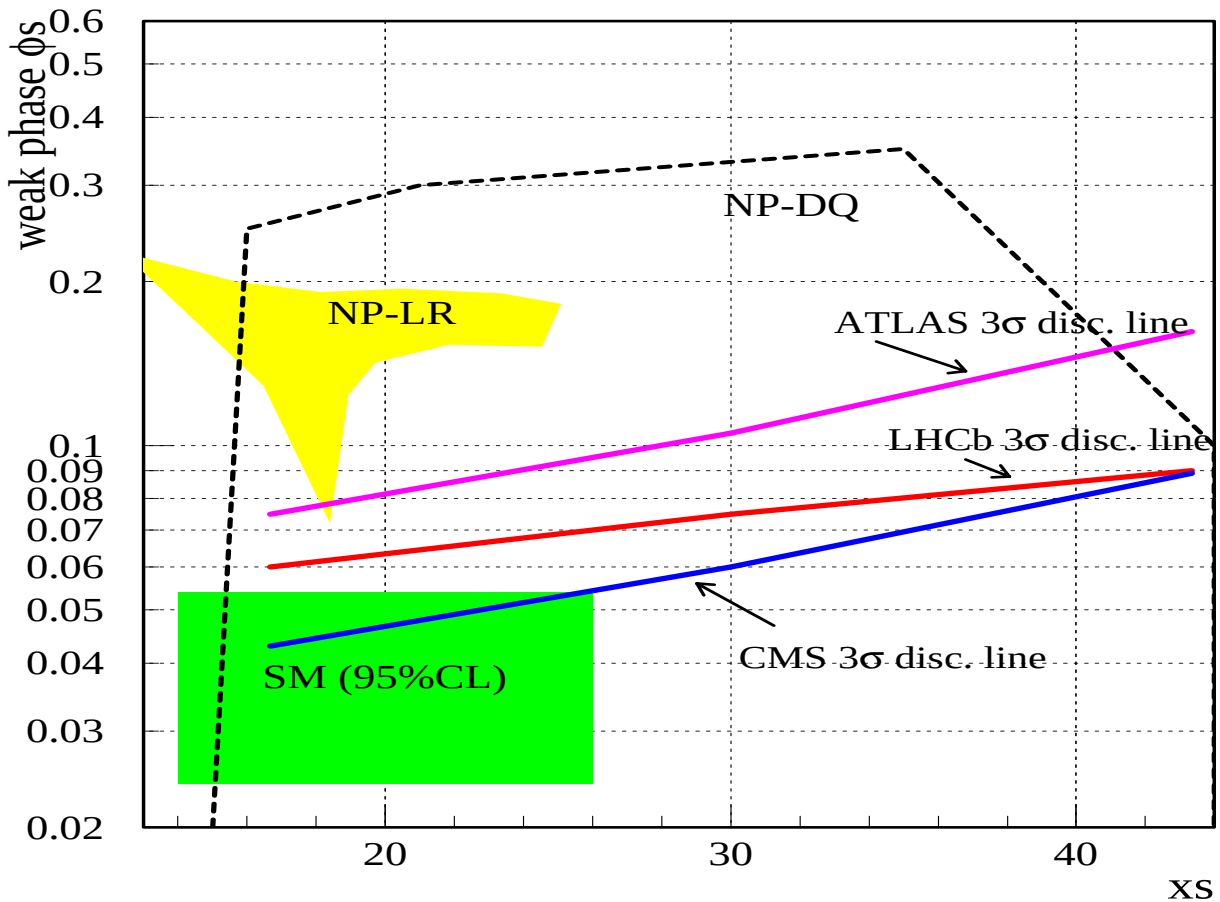
Beyond the SM Effects

Model	Predictions for A_{CP}	Comments
SM	$O(0.03)$	$A_{CP} \sim \sin \phi_s$
MSSM	~ SM	No new phase
Effective SUSY	modified	$A_{CP} \sim \sin (\phi_s - \theta_{NP})$
MHDM (with NFC)	~ SM	No new phase
MHDM (FCN scalars)	modified	New phases
Z mediated FCNC	modified (large)	New phases
SB-LR symm.	modified (large)	$A_{CP} \sim \sin (\phi_s + \phi_{NP})$
Four quark generations	modified	New phases
'Real superweak'	~ SM	No new phase

Large beyond the SM effects

Z mediated FCNC: isosinglet down quark (NP-DQ)

SB-LR symm :left-right symm. model with spontaneous CP violation (NP-LR)



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